



# 2006 Georgia Physical Activity Surveillance Report



**Live  
healthy  
Georgia**



# Acknowledgements

## **Georgia Department of Human Resources**

B.J. Walker, Commissioner

## **Division of Public Health**

Stuart T. Brown, M.D., Director

## **Epidemiology Branch**

Susan Lance, D.V.M., Ph.D., Director

## **Chronic Disease, Injury, and Environmental Epidemiology Section**

John Horan, M.D., M.P.H., Chief

## **For more information on physical activity surveillance in Georgia, please contact:**

Matthew Falb, M.H.S.

2 Peachtree Street, NW, 14th Floor

Atlanta, GA 30303-3142

404-463-4360

[mdfalb@dhr.state.ga.us](mailto:mdfalb@dhr.state.ga.us)

<http://health.state.ga.us/epi/cdiee/physical.asp>

## **Suggested Citation:**

Falb M, Kanny D, Thompson S, Wu M, Powell, K. 2006 Georgia Physical Activity Surveillance Report. Georgia Department of Human Resources, Division of Public Health, Chronic Disease, Injury, and Environmental Epidemiology Section, May 2006. Publication number: DPH06.062HW.

# Contents

<b>Highlights</b>	<b>2</b>
<b>Chapter 1:</b> About Physical Activity	<b>3</b>
<b>Chapter 2:</b> How Active are Georgians?	<b>6</b>
<b>Chapter 3:</b> Burden of Inactivity and Benefit of Activity	<b>12</b>
<b>Chapter 4:</b> Policies and Environments Supporting Physical Activity	<b>15</b>
<b>Chapter 5:</b> Strategies to Promote Physical Activity in Georgia	<b>22</b>
<b>Appendices</b>	
I. Physical activity-related objectives from Healthy People 2010 and current status of objectives in Georgia	<b>27</b>
II. Data Tables	<b>28</b>
<b>Table 1.</b> Percent of middle and high school students engaging in activity by sex, race/ethnicity, and grade, Georgia, 1993 and 2003.	
<b>Table 2.</b> Percent of adults engaging in activity by demographic groups, Georgia, 2003.	
<b>Table 3.</b> Percent of adults engaging in activity by county of residence, Georgia, 2001 and 2003.	
<b>Table 4.</b> Percent of adults engaging in activity by year, Georgia, 1984-2004.	
<b>Table 5.</b> Most common types of leisure time activity among adults, Georgia, 1984, 1994, and 2004.	
<b>Table 6.</b> Age-adjusted prevalence of adults with a chronic condition by physical activity level, Georgia, 2003.	
<b>Table 7.</b> Percent of middle and high schools providing policies and environments supporting physical activity, Georgia, 2002.	
<b>Table 8.</b> Percent of children aged 5-15 years who lived $\leq 1$ mile from school and walked to school, Georgia, 2000 and 2002-2003.	
<b>Table 9.</b> Percent of children aged 5-15 years who lived $\leq 1$ mile from school and did not walk or bike to school by reason they did not walk or bike to school, Georgia, 2002-2003.	
<b>Table 10.</b> Percent of adults with a safe place to walk by location, Georgia, 2001.	
<b>Table 11.</b> Percent of regularly active adults by access to a safe place to walk, Georgia, 2001.	
<b>Table 12.</b> Percent of worksites providing policies and environments supporting physical activity by size of worksite, Georgia, 2002.	
<b>Table 13.</b> Number of Health Maintenance Organizations (HMOs) providing physical activity-related services, Georgia, 2004.	
III. Details about estimating the burden of inactivity and benefits of activity	<b>36</b>
IV. Data sources for physical activity	<b>38</b>

# Highlights

- Regular physical activity reduces the risk of heart disease, high blood pressure, stroke, colon cancer, diabetes, falls and fractures.
- Insufficient activity and inactivity have had a severe health and economic impact on the state.
  - In 2003, insufficient activity and inactivity were responsible for:
    - 3,581 deaths
    - 21,538 hospitalizations
    - \$542 million in hospital charges
- The recommended amount of physical activity for good health is:
  - **Children and adolescents:** At least 60 minutes of age- and developmentally appropriate physical activity from a variety of physical activities on all or most days of the week. The recommended 60 minutes can be accumulated in 15-minute segments.
  - **Adults:** At least 30 minutes of moderate intensity activity on at least five, and preferably all days, of the week. The recommended 30 minutes can be accumulated in 10-minute segments.
- Too many Georgians do not get enough physical activity.
  - 68% of middle school students were vigorously active (Target: 85%).
  - 59% of high school students were vigorously active (Target: 85%).
  - 42% of adults were regularly active (Target: 50%).
- More environmental features and organizational policies are needed in schools, communities, worksites, and health care settings to promote regular activity.





# Chapter 1

## About Physical Activity

### Health Benefits of Regular Physical Activity

The benefits of physical activity are described and affirmed by numerous governmental and non-governmental organizations and supported by the Surgeon General's Report on Physical Activity and Health.<sup>1</sup> These benefits include reduced rates of heart disease, high blood pressure, diabetes, osteoporosis, colon cancer, anxiety, and decreases in the severity of depressive symptoms. Physical activity also helps people maintain healthy body weight, aids in the management of osteoarthritis, reduces the risk of falls and fractures, and enhances quality of life.

In addition to confirming and describing the health benefits of physical activity, the Surgeon General's report<sup>1</sup> contains three important messages. First, the regularity of activity is more important than the intensity. Second, activity need not be limited to special exercise sessions but can be woven into the fabric of routine activities. Third, inactive individuals improve their health by becoming more physically active even if they do not reach the recommended levels.

### Regularity

Regular physical activity at a moderate level, such as a brisk walk, bicycling, or gardening, improves physical health. To achieve this benefit, regularity is more important than the intensity or strenuousness of the physical activity. According to the U.S. Surgeon General<sup>1</sup>, adults can obtain significant health benefits by including 30 minutes of moderate physical activity on at least five, and preferably all days of the week.

School-aged children should accumulate at least 60 minutes of age- and developmentally appropriate physical activity from a variety of physical activities on all or most days of the week.<sup>2,3</sup> The National Association of Sports and Physical Education recommends toddlers and preschoolers engage in at least 60 minutes up to several hours of unstructured physical activity each day. Toddlers should accumulate 30 minutes and preschoolers 60 minutes of structured physical activity.<sup>4</sup>





## Short Sessions

The recommended daily minutes of physical activity does not need to take place all at once. For adults, it may be more feasible to break up the recommended daily minutes into ten-minute sessions throughout the day.<sup>1</sup> Some examples of ten-minute sessions include parking your car farther rather than closer to your destination, getting off public transportation a few stops early, and taking a ten-minute walk after lunch. Children may break up the recommended daily minutes into fifteen-minute sessions.<sup>2</sup> Some examples of fifteen-minute sessions include walking to schools in the neighborhood or participating in physical education courses at school.

## Every Increase Helps

The benefits of physical activity vary depending on the frequency and duration of physical activity. The current recommendations for adults and children are not rigid thresholds. For people who are already meeting these goals, adding more time or increasing the intensity of the activity will lead to additional benefits. For less active people, a little more physical activity improves their health and quality of life even if they do not fully achieve the recommended goal. People should select enjoyable activities that fit into daily life and try to involve friends and family as a means of support.<sup>1</sup>

## Physical Activity, Exercise, and Physical Fitness

In everyday speech, the terms physical activity, exercise, and physical fitness are commonly used interchangeably. However, there are important differences in the meanings of these terms.<sup>5</sup> *Physical activity* is any bodily movement produced by skeletal muscles that results in energy expenditure. The purpose of the movement may be related to occupation, household chores, transportation, sports, hobbies, or any other pursuit. *Exercise* is the part of physical activity that is planned, structured, repetitive, and is usually done to improve or maintain fitness. *Physical fitness* is a set of attributes or skills that describes a person's ability to perform and sustain physical activity, such as cardiovascular endurance, flexibility, and strength. Physical fitness is dependent upon both heredity and behavior. Genetic endowment cannot be changed, but physical activity behaviors, on the other hand can be changed.



## Healthy People 2010

Healthy People 2010 (HP 2010) is a document published by the U.S. Department of Health and Human Services. The document contains goals and objectives to guide the efforts of health professionals this decade.<sup>6</sup> This report provides information about Georgia's status in accomplishing many of the HP 2010 objectives related to physical activity. Currently, Georgia has collected and analyzed data pertaining to eleven of HP 2010's fifteen physical activity-related objectives. A list of the physical activity-related objectives and the status of each objective in Georgia is presented in Appendix I.

## Purpose of This Report

This report includes information about the physical activity patterns of Georgians, the costs of inactivity, policies and environmental support for physical activity, and suggestions for future actions. Chapter 2 describes current patterns of physical activity in Georgia, including the prevalence of physical activity, changes over time, differences between geographic regions of the state, and differences between groups of people based on their age, race/ethnicity, sex, and other characteristics. Chapter 3 describes rates of selected diseases by physical activity levels and estimates the cost of selected diseases in lives, hospitalizations, and hospital charges due to insufficient activity and inactivity. It also estimates the additional cost in lives, hospitalizations, and hospital charges if all Georgians were inactive. Chapter 4 describes policies and environments supporting physical activity by setting in Georgia. Chapter 5 suggests strategies to make it easier for people to be physically active.



## REFERENCES

1. U.S. Department of Health and Human Services. *Physical Activity and health: a report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 1996.
2. National Association for Sport and Physical Education. *Physical Activity for Children: A Statement of Guidelines for Children Ages 5-12*, 2nd edition. National Association for Sport and Physical Education, Council on Physical Education for Children, December 2003.
3. Strong WB, Malina RM, Blimkie CJ, Daniels SR, et al. Evidence based physical activity for school-age youth. *J Pediatr* 2005;146(6):732-7.
4. National Association for Sport and Physical Education. *Active Start: A Statement of Physical Activity Guidelines for Children Birth to Five Years*. National Association for Sport and Physical Education, February 2002.
5. Caspersen CJ, Powell KE, Christenson GM. Physical activity, exercise, and physical fitness: Definitions and distinctions for health related research. *Public Health Reports* 1985;100:126-131.
6. U.S. Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd Edition. Washington, DC: U.S. Government Printing Office, November 2000.



# Chapter 2

## How Active Are Georgians?

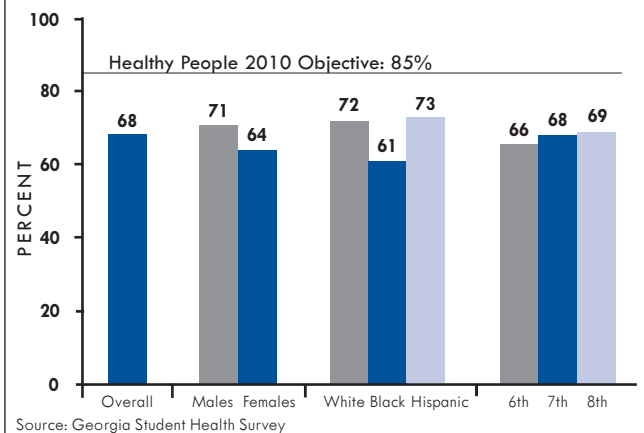
### Highlights

- 68% of middle school students were vigorously active.
- 59% of high school students were vigorously active.
- 42% of adults in Georgia were regularly active.

### Middle School Students

In 2003, 68% of middle school students in Georgia were vigorously active for at least 20 minutes on three or more days per week (Appendix II, Table 1).<sup>1</sup> Males were more likely to be active than females and whites were more likely to be active than blacks. However, all race/ethnicity-, sex-, and grade-groups were consistently below the Healthy People 2010 objective of 85% for vigorous activity in adolescents (Figure 2-1).<sup>2</sup>

**Figure 2-1.** Percent of vigorously active middle school students by sex, race/ethnicity, and grade, Georgia, 2003

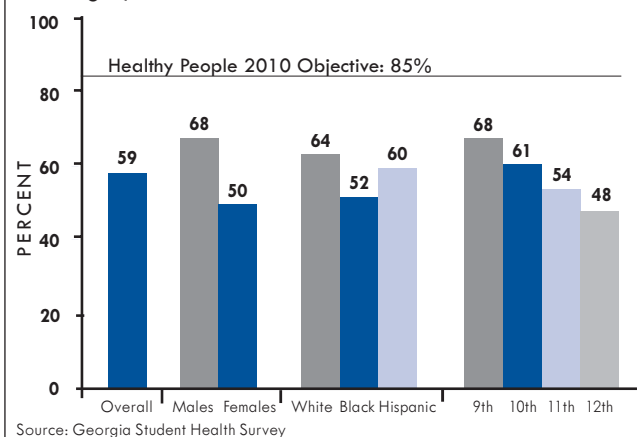


### High School Students

In 2003, 59% of high school students in Georgia were vigorously active for at least 20 minutes on three or more days per week (Appendix II, Table 1). Males were more likely to be active than females and 9th grade students were more likely to be active than 11th or 12th grade students. However, the percent of vigorously active overall and in each sex-, race/ethnicity-, and grade-groups was well below the Healthy People 2010 objective for adolescents (Figure 2-2).<sup>1</sup>

Between 1993 and 2003, there was no change in the percent of high school students engaging in at least 20 minutes of vigorous activity on 3 or more days per week.<sup>3</sup>

**Figure 2-2.** Percent of vigorously active high school students by sex, race/ethnicity, and grade, Georgia, 2003

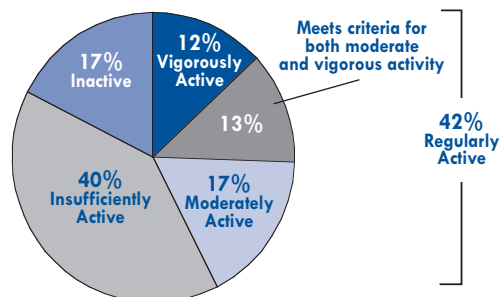




## Adults

In 2003, 42% of adults in Georgia were regularly active, 40% were insufficiently active, and 17% were inactive during leisure time (Appendix II, Table 2). Among the regularly active, 17% were moderately active 30 minutes or more per day for five or more days per week, 12% were vigorously active for 20 minutes or more per day on three or more days per week, while 13% met the criteria for both moderate and vigorous physical activity (Figure 2-3).<sup>4</sup> The percent of adults engaging in regular moderate or vigorous intensity activity was below the Healthy People 2010 objective of 50%.<sup>2</sup>

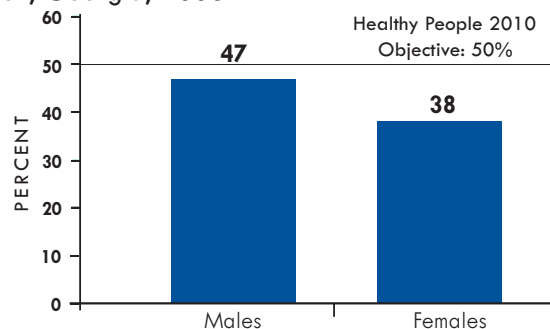
**Figure 2-3.** Percent of adults by physical activity level, Georgia, 2003



Source: Behavioral Risk Factor Surveillance System

Men were more likely to be regularly active (47%) than women (38%) (Figure 2-4). Neither males or females met the Healthy People 2010 objective for regular activity (50%).

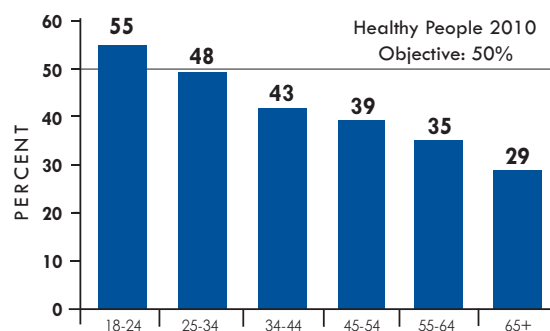
**Figure 2-4.** Percent of regularly active adults by sex, Georgia, 2003



Source: Behavioral Risk Factor Surveillance System

The percent of regularly active adults decreased with age (Figure 2-5). Adults aged 18-24 (55%) were the only age group to meet the Healthy People 2010 objective for regular activity (50%).

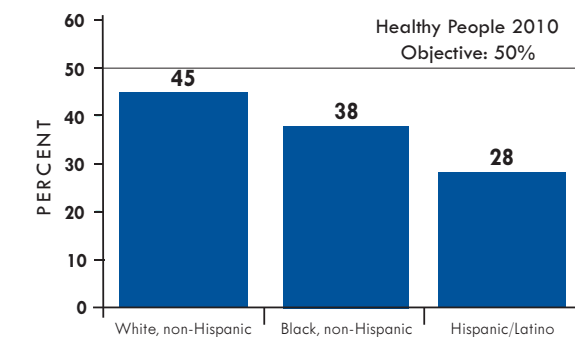
**Figure 2-5.** Percent of regularly active adults by age, Georgia, 2003



Source: Behavioral Risk Factor Surveillance System

Whites were more likely to be regularly active (45%) than blacks (38%) or Hispanics (28%) (Figure 2-6). None of the race/ethnic groups in Georgia met the Healthy People 2010 objective for regular activity (50%).

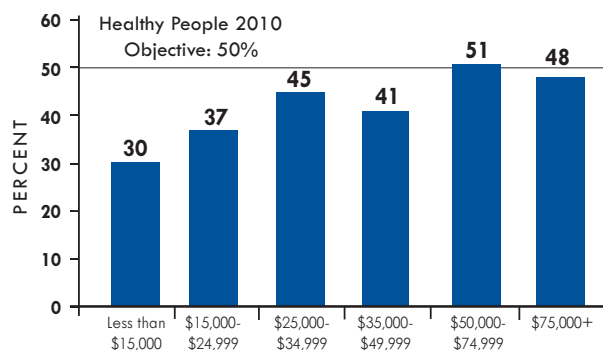
**Figure 2-6.** Percent of regularly active adults by race/ethnicity, Georgia, 2003



Source: Behavioral Risk Factor Surveillance System

Adults with household incomes of \$50,000-\$74,999 and \$75,000 or more were more likely to be regularly active than adults with household incomes of less than \$15,000 or \$15,000-\$24,999 (Figure 2-7). Adults with household incomes of \$50,000-\$74,999 (51%) were the only household income group to meet the Healthy People 2010 objective for regular activity (50%).

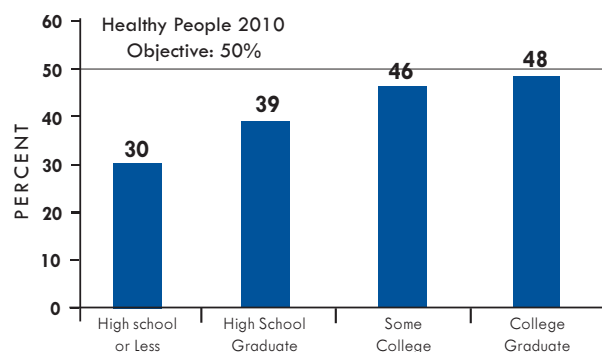
**Figure 2-7.** Percent of regularly active adults by income, Georgia, 2003



Source: Behavioral Risk Factor Surveillance System

The percent of regularly active adults increased with increasing education (Figure 2-8). None of the education groups met the Healthy People 2010 objective for regular activity (50%).

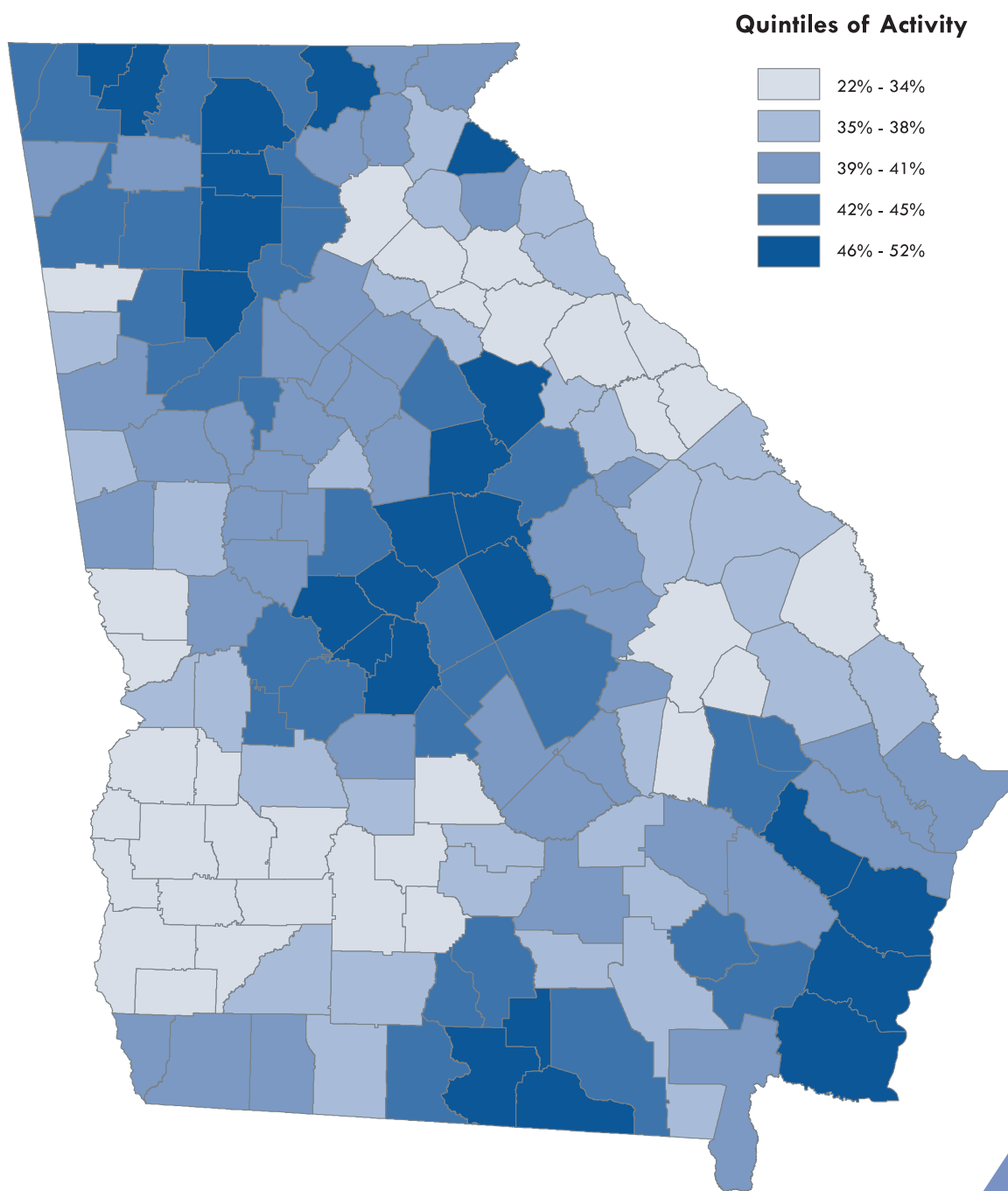
**Figure 2-8.** Percent of regularly active adults by education, Georgia, 2003



Source: Behavioral Risk Factor Surveillance System

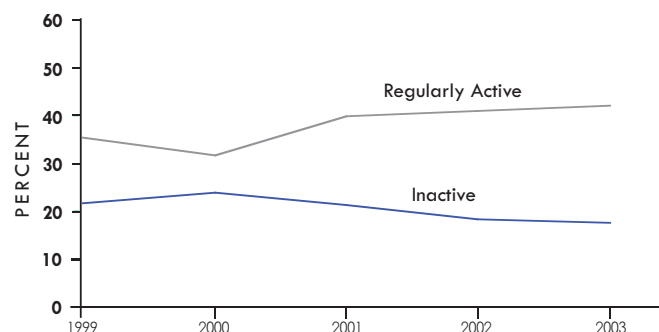
Participation in regular activity differed across regions of the state (Appendix II, Table 3). Adults living in the northwestern, central, and southeastern regions of the state were more likely to be regularly active. The lowest rates of regular activity were found in the southwestern and eastern parts of Georgia.<sup>4,5</sup> Regions of high regular activity have remained consistent since the 1990s.<sup>6</sup>

**Figure 2-9.** Percent of regularly active adults by county of residence, Georgia, 2001 and 2003



Participation in leisure time physical activity among Georgia adults changed between 1999 and 2003 (Figure 2-10). The percent of regularly active adults increased while rates of physical inactivity (less than 10 minutes of moderate or vigorous activity per day) decreased during this period (Appendix II, Table 4).<sup>7</sup>

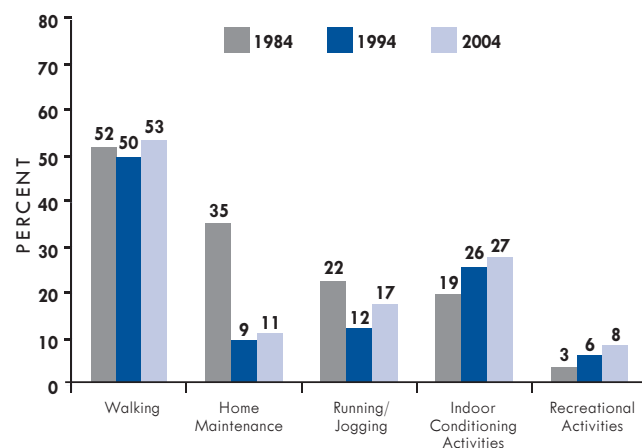
**Figure 2-10.** Percent of regularly active and inactive adults, Georgia, 1999-2003



Source: Behavioral Risk Factor Surveillance System

Walking was the most common activity reported during leisure time in 1984, 1994, and 2004 (Figure 2-11). Participation in home maintenance (e.g., gardening, raking lawn) and running decreased while indoor conditioning (e.g., aerobics, home exercise) and recreational activities (e.g., bicycling for pleasure, bowling) increased (Appendix II, Table 5).<sup>7</sup>

**Figure 2-11.** Most common types of leisure time physical activity among adults, Georgia, 1984, 1994, and 2004



Source: Behavioral Risk Factor Surveillance System

The percent of adults engaging in no physical activity for exercise during leisure time increased from 1985 to 1996 and then decreased since 1996 (Appendix II, Table 4).<sup>7</sup> Despite this decrease, the percent of adults engaging in no leisure time physical activity in 2003 did not meet the Healthy People 2010 objective (20%) (Figure 2-12).<sup>2</sup>

**Figure 2-12.** Percent of adults with no leisure time physical activity, 3-year average, Georgia, 1985-2003



Source: Behavioral Risk Factor Surveillance System



## REFERENCES

1. Kanny D, Powell KE. 2003 Georgia Student Health Survey Report. Georgia Department of Human Resources, Division of Public Health, November 2003. Publication Number: DPH03/144.
2. U.S. Department of Health and Human Services. Healthy People 2010: Understanding and Improving Health. 2nd Edition. Washington, DC: U.S. Government Printing Office, November 2000.
3. Kanny D, Powell KE. Health Behaviors among Georgia Youth: A Decade of Change 1993 and 2003. Georgia Department of Human Resources, Division of Public Health, December 2003. Publication Number: DPH03/137HW.
4. Kanny D, Thompson S, Gregory K. Georgia Behavioral Risk Factor Surveillance System, 2003 Report. Georgia Department of Human Resources, Division of Public Health, Chronic Disease, Injury, and Environmental Epidemiology Section, June 2005. Publication Number: DPH05/053H.
5. Martin LM, Chowdhury PP, Powell KE, Clanton J. Georgia Behavioral Risk Factor Surveillance System, 2001 Report. Georgia Department of Human Resources, Division of Public Health, Chronic Disease, Injury, and Environmental Epidemiology Section, March 2003. Publication Number: DPH03/069HW.
6. Bricker SK, Powell KE, Parashar U, Rowe AK, Troy KG, Seim KM, Eidson PL, Wilson PS, Pilgrim VC, Smith EM. Physical Activity Report, Georgia, 2001. Georgia Department of Human Resources, Division of Public Health and the American Heart Association, Southeast Affiliate, September 2001. Publication Number: DPH01.81HW.
7. Behavioral Risk Factor Surveillance System: Atlanta, GA. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

# Chapter 3

## Burden of Inactivity and Benefits of Activity

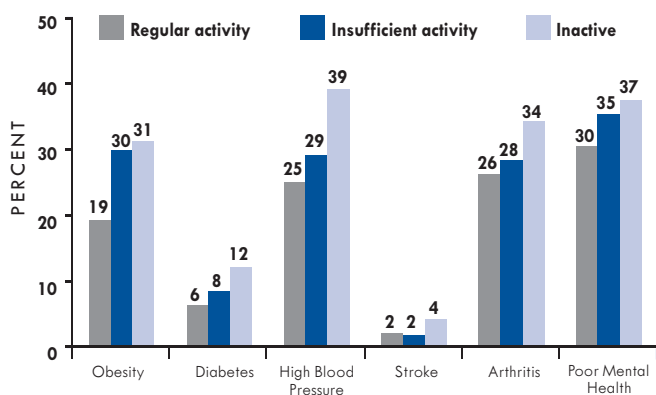
### Highlights

- Inactive adults were more likely to be obese, have diabetes, high blood pressure, stroke, arthritis, and report poor mental health than regularly active adults.
- In 2003, insufficient activity and inactivity were responsible for an estimated:
  - 3,581 deaths.
  - 21,538 hospitalizations.
  - \$542 million in hospital charges.
- If all adults in Georgia were inactive in 2003, this would result in an additional:
  - 6,888 deaths.
  - 41,475 hospitalizations.
  - \$1 billion in hospital charges.

### Health Burden of Insufficient Activity

Physical inactivity is associated with increased risk for some chronic diseases and mortality as well as excessive health care costs. In 2003, physically inactive adults were more likely to be obese, have diabetes and high blood pressure, and suffer from stroke, compared to those who are regularly active (Figure 3-1). In addition, inactive adults were more likely to have arthritis or joint symptoms and report one or more days of poor mental health (Appendix II, Table 6).

**Figure 3-1.** Age-adjusted prevalence of adults with a chronic condition by physical activity level, Georgia, 2003



Source: Behavioral Risk Factor Surveillance System



## The Burdens:

### Premature deaths, hospitalizations, and hospital charges

Physically inactive and insufficiently active lifestyles result in health and economic burdens that are potentially avoidable if everyone were regularly active. This burden can be estimated based upon the health risks for inactive lifestyles and the proportion of inactive and insufficiently active people in Georgia. These estimates, called the Population Attributable Risk (PAR), provide a useful measure of the burden of the lack of regular physical activity on the health of the population.

PAR estimates suggest that if all Georgians were regularly active, there would be approximately 25% fewer people with coronary heart disease, 13% fewer people with high blood pressure, 13% fewer people with stroke, 13% fewer people with colon cancer, 14% fewer people with diabetes, and 18% fewer people with falls with osteoporotic-related fractures.

Based on the PAR for heart disease, high blood pressure, stroke, colon cancer, diabetes, and falls with osteoporotic-related fractures, the avoidable deaths, hospitalizations, and hospital charges attributable to inactive and insufficiently active lifestyles in 2003 are presented in Table 3-1. If all Georgians became regularly active, there would be an estimated 3,581 fewer deaths, 21,593 fewer hospitalizations, and \$542 million fewer hospital charges due to these conditions. See Appendix III for more information about PAR.

**Table 3-1. Estimated burden of inactive and insufficiently active lifestyles, Georgia, 2003**

Condition	PAR	Deaths		Hospitalizations		Hospital charges (millions)	
		Actual	Avoidable	Actual	Avoidable	Actual	Avoidable
Heart Disease	25%	9,579	2,395	52,930	13,233	\$1,506	\$376
High Blood Pressure	13%	1,840	239	10,059	1,308	\$161	\$21
Stroke	13%	4,285	557	25,263	3,284	\$539	\$70
Colon Cancer	13%	1,083	141	2,712	353	\$938	\$12
Diabetes	14%	1,720	241	15,532	2,174	\$220	\$31
Falls with Osteoporotic Fractures	18%	44	8	6,896	1,241	\$176	\$32
<b>Total</b>			3,581		21,593		\$542

## The Benefits:

### Avoided premature deaths, hospitalizations, and hospital charges

The additional deaths, hospitalizations, and hospital charges that theoretically would have happened if all Georgians were inactive but were prevented because some persons were either regularly or insufficiently active are called the population events prevented (PEP). The PEP is an estimated figure and, like the PAR, is not precise. Nevertheless, it is important to note that some Georgians are in better health because they are physically active, and that these health benefits lead to reductions in deaths, hospitalizations, and hospital charges. See Appendix III for more information about PEP.

If all Georgians were inactive, then there would have been 50% more people with coronary heart disease, 22% more people with high blood pressure, 22% more people with stroke, 22% more people with colon cancer, 29% more people with diabetes, and 31% more people with falls with osteoporotic-related fractures. For the six conditions combined, an estimated additional 6,888 deaths, 41,475 hospitalizations, and over \$1 billion in hospital charges did not occur (Table 3-2).

**Table 3-2.** Estimated benefits from regularly active and insufficiently active lifestyles, Georgia, 2003

Condition	PEP	Deaths		Hospitalizations		Hospital charges (millions)	
		Actual	Avoided	Actual	Avoided	Actual	Avoided
Heart Disease	50%	9,579	4,790	52,930	26,465	\$1,506	\$753
High Blood Pressure	22%	1,840	405	10,059	2,213	\$161	\$35
Stroke	22%	4,285	943	25,263	5,558	\$539	\$119
Colon Cancer	22%	1,083	238	2,712	597	\$938	\$206
Diabetes	29%	1,720	499	15,532	4,504	\$220	\$64
Falls with Osteoporotic Fractures	31%	44	14	6,896	2,138	\$176	\$55
<b>Total</b>			6,888		41,475		\$1,232



# Chapter 4

## Policies and Environments Supporting Physical Activity

### Highlights

---

#### Schools

- One in four middle (26%) and high (28%) schools in Georgia allowed faculty to use physical activity as a punishment for bad behavior.
- Most middle schools (62%) and high schools (94%) in Georgia required students to take at least one physical education course, but the proportion of schools requiring physical education in every grade level is unknown.
- Only three in ten (29%) middle and high school students in Georgia attended daily physical education class.
- Most high school students (84%) in Georgia who attended school physical education class were active for at least 20 minutes in class.
- Over half of middle (54%) and high (53%) school students in Georgia participated on one or more sports teams in the last year.
- Most middle schools (86%) and high schools (79%) in Georgia allowed use of school's athletic facilities outside of school hours.

#### Community

- Few children (13%) aged 5-15 years in Georgia, who lived 1 mile or less from school, walked to school.
- Traffic was the most frequently reported barrier (54%) to walking to school among children in Georgia who lived 1 mile or less from school and did not walk or cycle to school.
- Adult Georgians with a safe and convenient place to walk were more likely to engage in regular activity (42%) than those with no place to walk (27%).

#### Worksites

- Few worksites in Georgia offered policies, environments, and programs supporting physical activity for employees.

#### Health care

- Among six Health Maintenance Organizations (HMOs) in Georgia, most had policies to support physical activity by providing educational material (5), counseling (4), or discounts or fee reductions to join programs (3) to all members.
- Only one HMO in Georgia had a policy to reimburse for physical activity assessments.

### Introduction

---

One promising approach to increasing physical activity is to make it easier for people to be active. This includes changing the environment in which activity occurs and modifying or creating organizational policies that affect the environment and people's behavior. Focusing attention on the environment acknowledges that there are certain barriers that individuals cannot control.

This chapter presents data on environments and policies promoting physical activity by setting in Georgia.

## Schools

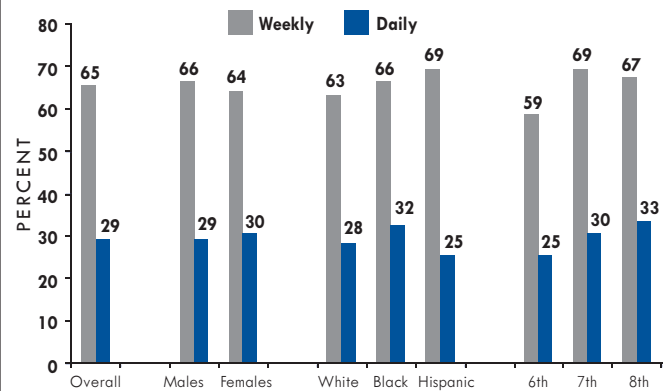
The physical and social environment at school should support safe and enjoyable physical activity and discourage the use or withholding of physical activity as punishment. The use of physical activity as punishment risks creating negative associations with physical activity for young persons while withholding activity denies students the health benefits.<sup>1</sup> One in four middle (26%) and high (28%) schools allowed faculty to use physical activity as a punishment for bad behavior (Appendix II, Table 7).<sup>2</sup>

Physical education can increase students' knowledge, self-efficacy for participating in physical activity, and overall fitness.<sup>1</sup> In Georgia, physical education is a required course at 62% of middle schools and 94% of high schools (Appendix II, Table 7).<sup>2</sup> However, the proportion of schools requiring physical education at every grade level is unknown.

### Weekly physical education attendance

Only 65% of middle school students (Figure 4-1) and 37% of high school students (Figure 4-2) attended physical education class on one or more days during an average school week (Appendix II, Table 1). Weekly physical education attendance in middle school students did not differ by sex, race/ethnicity or grade (Figure 4-1). High school males were more likely to participate in weekly physical education than females and 9th grade students were more likely to attend weekly physical education than students in the other grades (Figure 4-2).<sup>3</sup> The percent of high school students in Georgia attending school physical education class on at least one day per week was consistently below the national prevalence in 1993 and 2003.<sup>4</sup>

**Figure 4-1.** Percent of middle school students attending physical education class on at least one day per week and daily, Georgia, 2003

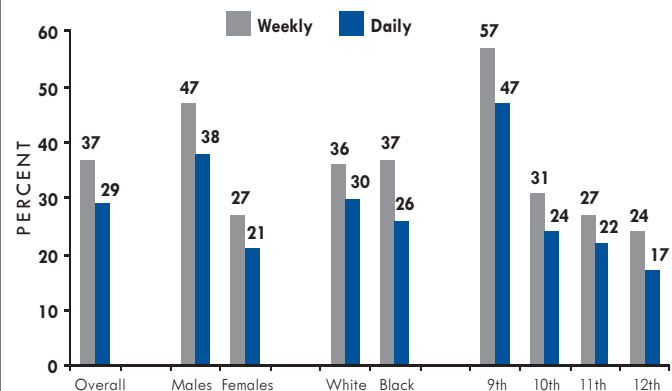


Source: Georgia Student Health Survey

### Daily physical education attendance

In addition, participation in daily physical education class by middle and high school students in Georgia was low. Only three in ten middle (Figure 4-1) and high school (Figure 4-2) students reported daily physical education attendance (Appendix II, Table 1).<sup>3</sup> The Healthy People 2010 objective for daily school physical education attendance is 50%.<sup>5</sup> Daily physical education attendance in middle school students did not differ by sex, race/ethnicity or grade (Figure 4-1). High school males were more likely to participate in daily physical education than females and 9th grade students were more likely to attend daily physical education than students in the other grades (Figure 4-2). However, all sex, race/ethnicity, and grade groups of middle and high school students (Appendix II, Table 1) were below the national goal.<sup>3</sup>

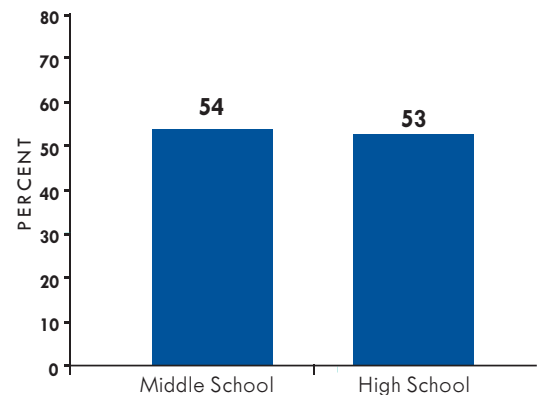
**Figure 4-2.** Percent of high school students attending physical education class at least one day per week and daily, Georgia, 2003



Source: Georgia Student Health Survey

Students being physically active for at least 20 minutes in school physical education class on at least half of the school days would provide a substantial proportion of the physical activity time recommended for adolescents.<sup>6</sup> Of high school students who attended school physical education class, most (84%) exercised or played sports for at least 20 minutes in class in 2003. The percent of high school students active in physical education increased from 76% in 1993 to 84% in 2003 (Appendix II, Table 1).<sup>7</sup>

**Figure 4-3.** Percent of students participating on sports teams by school type, Georgia, 2003

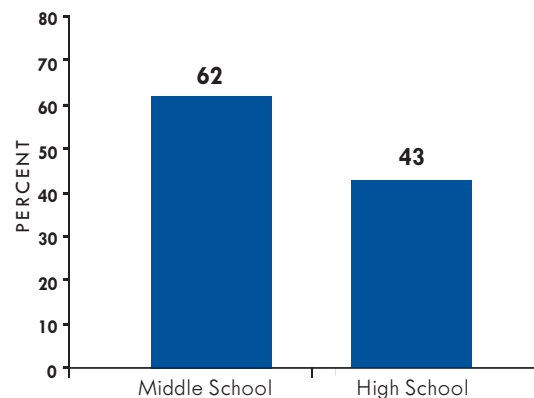


Source: Georgia Student Health Survey

Participation in extracurricular activities such as intramurals and school or community sports teams contributes to the physical and social development of young people.<sup>8</sup> Over half of middle (54%) and high school (53%) students in Georgia participated on one or more sports team in 2003 (Figure 4-3) (Appendix II, Table 1). Middle and high school males were more likely to participate on a sports team than females. Lower rates of participation were found in 12th grade students compared to 9th graders. Participation did not differ by race/ethnicity in middle or high school students.<sup>3</sup>

Middle schools (62%) were more likely to offer intramural activities than high schools (43%) (Figure 4-4) (Appendix II, Table 7).<sup>2</sup>

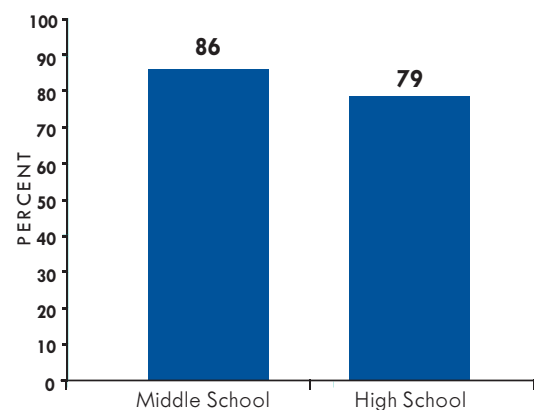
**Figure 4-4.** Percent of schools offering intramural activities by school type, Georgia, 2002



Source: School Health Education Profile

Outside of school hours, school physical activity spaces and facilities should be available to young people.<sup>1</sup> Healthy People 2010 recommends the nation's public and private schools provide access to their physical activity facilities for all persons outside of normal school hours.<sup>5</sup> Most public middle (86%) and high (79%) schools allowed children or adolescents to use the school's athletic facilities for community-sponsored sports teams or physical activity programs outside of school hours or when school is not in session (Figure 4-5) (Appendix II, Table 7).<sup>2</sup>

**Figure 4-5.** Percent of public schools that allow use of school's athletic facilities outside of school hours by school type, Georgia, 2002



Source: School Health Education Profile

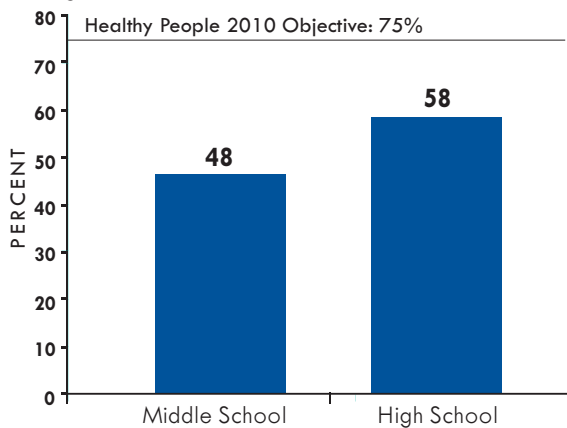
## Community

Sedentary after-school activities such as excessive television viewing or computer use may contribute to the growing rates of overweight children.<sup>9</sup> In 2003, approximately half of middle (48%) and high (58%) school students in Georgia limited their television viewing to 2 or less hours on school days (Figure 4-6).<sup>3</sup> This percentage was well below the goal (75%) established in Healthy People 2010.<sup>5</sup> Black middle and

high school students were less likely to limit television viewing than white students. However, all sex, race/ethnicity, and grade groups of middle and high school students were below the Healthy People 2010 goal (Appendix II, Table 1).<sup>3</sup>

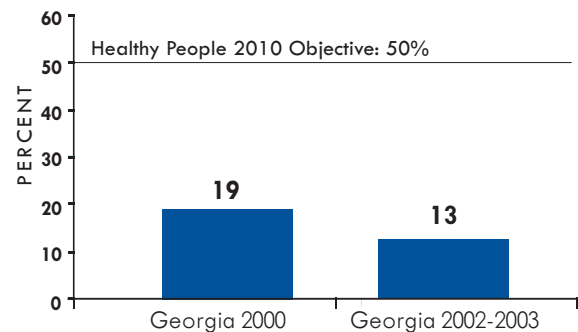
Walking to school provides a convenient opportunity for children and adolescents to make physical activity a part of their daily routines. Few (13%) children aged 5 through 15 years, who lived one mile or less from school, walked to school the majority of days of the week in 2002-2003 (Figure 4-7) (Appendix II, Table 8).<sup>10</sup> The Healthy People objective for children aged 5 to 15 years who live within one mile and walk to school is 50 percent by 2010.<sup>5</sup>

**Figure 4-6.** Percent of middle and high school students who watched 2 hours or less of TV per school day, Georgia, 2003



Source: Georgia Student Health Survey

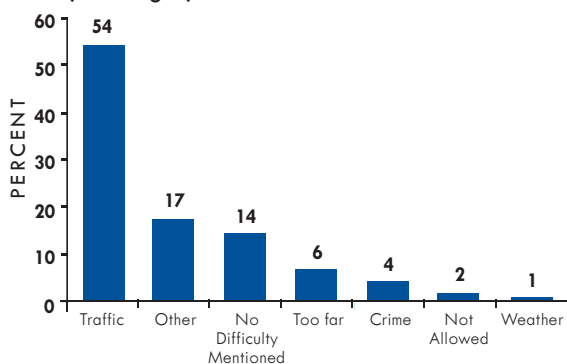
**Figure 4-7.** Percent of children aged 5-15 years, who lived  $\leq 1$  mile from school and walked to school, Georgia, 2000 and 2002-2003



Source: Georgia Asthma Household Survey

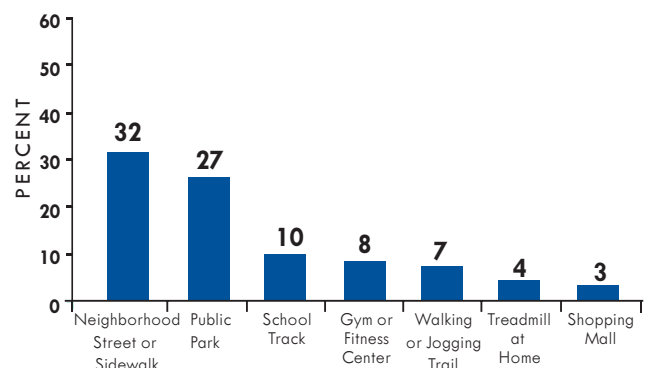
While the decision to participate in physical activity is made by individuals, safety and convenience are important factors in promoting activity. Among children living one mile or less from school who did not walk or bike to school, over half (54%) reported traffic as a barrier to walking to school (Figure 4-8) (Appendix II, Table 9).<sup>10</sup> Among adults in Georgia, the most frequently reported place where they would feel safe walking was neighborhood streets or sidewalks (32%), followed by public parks (27%), and school tracks (10%) (Figure 4-9) (Appendix II, Table 10). Adults with access to safe and convenient places to walk were more likely to engage in regular activity (42%) than those without access to a safe place to walk (27%) (Appendix II, Table 11).<sup>11</sup>

**Figure 4-8.** Percentage of children aged 5-15 years, who lived  $\leq 1$  mile from school and did not walk or bike to school, by reason they did not walk or bike to school, Georgia, 2002-2003



Source: Georgia Asthma Household Survey

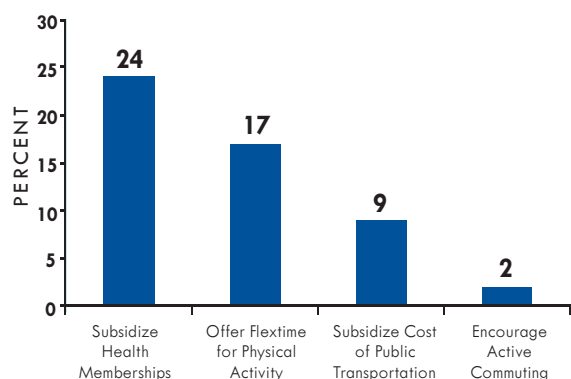
**Figure 4-9.** Percent of adults with access to a safe place to walk by location, Georgia, 2001



Source: Behavioral Risk Factor Surveillance System



**Figure 4-10.** Percent of worksites with policies supporting physical activity, Georgia, 2002



Source: Georgia Worksite Health Promotion Policies and Practices Survey

## Worksites

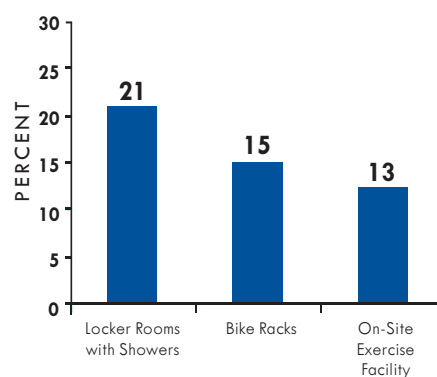
With the majority of adults in Georgia working at mostly sedentary jobs and not engaging in regular physical activity<sup>12</sup>, worksites provide an opportune setting to tackle this challenge by modifying and creating policies and environments that support active lifestyles.<sup>13</sup>

In 2002, few worksites in Georgia offered policies, environments, or programs to support physical activity for employees (Appendix II, Table 12). Only 2% had a policy to encourage commute by foot or bike and 9% subsidized the cost of public transportation (Figure 4-10). Only 1 in 5 worksites (17%) offered flextime or special breaks for physical activity and 1 in 4 (24%) offered subsidized or reduced rate health club memberships.<sup>14</sup>

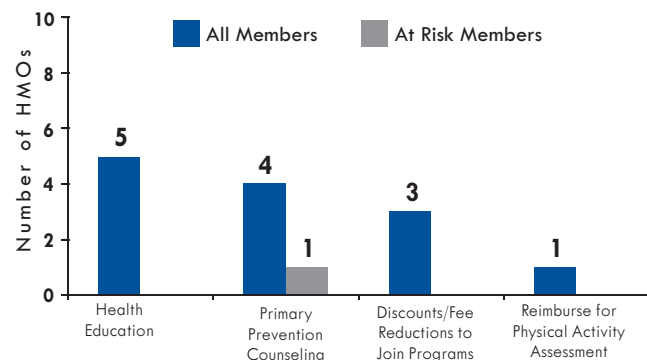
Few worksites had on-site exercise facilities (13%) or supported active commuting through providing locker rooms with showers (21%) or bike racks (15%) (Figure 4-11). In addition, only 1 in 5 (17%) offered physical activity or fitness programs to employees.<sup>14</sup> This percentage was well below the Healthy People 2010 target of 75% (Appendix II, Table 12).<sup>5</sup>

Large worksites (250 or more employees) were more likely to have policies, environments, and programs supporting physical activity than small worksites (15-99 employees).<sup>14</sup>

**Figure 4-11.** Percent of worksites providing environmental support for physical activity, Georgia, 2002



**Figure 4-12.** Number of Health Maintenance Organizations (HMOs) with physical activity-related services, Georgia, 2004



Source: Georgia Health Plan Policies and Practices Survey

## Health Care

The practices and policies of the health care community play a large role in disease prevention. The U.S. Department of Health and Human Services has encouraged providers to incorporate physical activity counseling in the primary care setting.<sup>5</sup> Despite this recommendation, physical activity counseling was provided in only 30% of visits by adults with high cholesterol, high blood pressure, obesity or diabetes in the U.S.<sup>15</sup> Given the substantial proportion of Georgia residents who have health insurance of some sort (84%),<sup>12</sup> managed care organizations can play a significant role in promoting behavior modification by developing policies that support physical activity.

In 2004, the Center for Health Services Research at Georgia State University and Georgia Division of Public Health assessed the prevalence of health promotion policies and practices in health plans offered by six Health Maintenance Organizations (HMOs) covering 93% of the HMO member population in Georgia.<sup>16</sup>

Among the 6 HMOs, most supported physical activity by providing educational materials (5), counseling (4), or discounts or fee reductions to join programs (3) to all members (Figure 4-12). One HMO offered physical activity counseling to high-risk members only. While most HMOs had policies to encourage providers to counsel members on the benefits of physical activity, only one of the six HMOs reimbursed for physical activity assessments (Figure 4-12, Appendix II, Table 13).<sup>16</sup>



## REFERENCES

1. Centers for Disease Control and Prevention. Guidelines for school and community programs to promote lifelong physical activity among young people. *MMWR* 1997;46 (No. RR-6).
2. Kanny D, Choi HS, Hammond DA. School Health Education in Georgia: Results from the 2002 School Health Education Profile (SHEP) Survey. Georgia Department of Human Resources, Division of Public Health, February 2004. Publication Number DPH04.181HW.
3. Kanny D and Powell KE. Georgia Student Health Survey Report. Georgia Department of Human Resources, Division of Public Health, November 2003. Publication Number: DPH03.137HW.
4. Youth Risk Behavior Surveillance System: Atlanta, GA. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.
5. U.S. Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd Edition. Washington, DC: U.S. Government Printing Office, November 2000.
6. Sallis JF and Patrick K. Physical activity guidelines for adolescents: Consensus statement. *Pediatric Exercise Science* 6:302-314, 1994.
7. Kanny D and Powell KE. Health Behaviors among Georgia Youth: A Decade of Change, 1993 and 2003. Georgia Department of Human Resources, Division of Public Health, December 2003. Publication Number DPH03.137HW.
8. Burgeson C, Wechsler H, Brener N, Young J, and Spain C. Physical education and activity: results from the School Health Policies and Programs Study 2000. *Journal of School Health* 2000; 71: 279-93.
9. Dowda M, Ainsworth BE, Addy CL, Saunders R, Riner W. Environmental influences, physical activity and weight status in 8- to 16-year olds. *Arch Pediatr Adolesc Med* 2001;155:711-7.
10. Choi H and Kanny D. How do Georgia children get to school? Results from the 2002 Georgia Asthma Survey. Georgia Department of Human Resources, Division of Public Health, July 2003. Unpublished Data.
11. Powell KE, Martin LM, Chowdhury PP. Places to Walk: Convenience and Regular Physical Activity. *Am J Public Health* 2003;93(9):1519-21.
12. Behavioral Risk Factor Surveillance System: Atlanta, GA. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.
13. Centers for Disease Control and Prevention. *Promising Practice in Chronic Disease Prevention and Control: A Public Health Framework for Action*. Atlanta, GA: U.S. Department of Health and Human Services, 2003.
14. Choi HS, Bricker SK, Troy K, Kanny D, Powell K. Worksite Health Promotion Policies and Practices in Georgia: 2002 Georgia Worksite Survey. Georgia Department of Human Resources, Division of Public Health, January 2004. Publication Number DPH03.156HW.
15. Ma J, Urizar GG Jr, Aleghen T, Stafford RS. Diet and physical activity counseling during ambulatory care visits in the United States. *Prev Med* 2004;39(4):815-22.
16. Kanny D, Newman JF, Choi HS, Curry RH, Powell KE. "Survey of Georgia's health plan policies and practices related to cardiovascular health and HEDIS measures". Second National CDC Prevention Conference on Heart Disease and Stroke, August 18, 2004, Atlanta, GA, USA.

# Chapter 5

## Strategies to Promote Physical Activity in Georgia

Georgia has begun addressing the problem of physical inactivity by convening stakeholders to lead the development and implementation of a 10-year nutrition and physical activity plan for Georgia. The statewide collaborative group, **Take Charge of Your Health, Georgia!**, includes Department of Human Resources (DHR), Division of Public Health staff; State departments of Education, Transportation, and Parks and Recreation staff; leaders from faith- and community-based organizations; health care professionals; universities; and statewide coalitions. **Take Charge of Your Health, Georgia!** is also working in partnership with DHR's and Governor Perdue's **Live Healthy Georgia** campaign to promote healthy eating and physical activity. The Plan identifies nutrition, physical activity, television viewing, and breastfeeding strategies (education/ skill building, policy and environmental approaches) in the school, worksite, health care, faith-based, and community settings.



The **Take Charge of Your Health, Georgia!** Task Force was convened to identify strategies to promote physical activity in Georgia. The Task Force used the Socio-Ecological Model as a theoretical framework for understanding the multiple factors that influence health behavior. This theoretical model is designed to guide researchers and practitioners to comprehensively and systematically assess and intervene on each level as appropriate. The five levels of influence are **individual factors** such as awareness, knowledge, attitudes, beliefs, values, and preferences; **interpersonal factors** such as family, friends, and peers that provide social identity and support; **organizational factors** such as rules, policies, procedures, environment, and informal structure within an organization; **community factors** such as social networks and norms which exist formally or informally among individuals, groups, and organizations; and **societal factors** such as local, state, and federal government policies and laws that regulate or support healthy actions and practices for disease prevention, early detection, control, and management. An underlying assumption is that a comprehensive approach is more effective than a single-level approach.<sup>1</sup>

See pages 24-26 for a list of strategies from the Task Force to promote physical activity in Georgia.

---

### REFERENCE

1. McLeroy KR, Bibeau D, Steckler A, Glantz K. An ecological perspective on health promotion programs. *Hlth Educ Q* 1998;15(4):351-73.







## Strategies to Promote Physical Activity, by Setting

	INDIVIDUAL AND INTERPERSONAL	POLICY AND ENVIRONMENT
SCHOOLS	Conduct school-wide campaigns to promote increased daily physical activity among children and adolescents.	Promote retention of existing neighborhood schools and placement of new schools in areas that facilitate walking and biking to school. <sup>4,5</sup>
	Incorporate physical activity messages and activities into academic subjects and core curriculum. (classroom-based health education).	Improve playground areas to promote increased physical activity during recess.
	Plan, establish, and implement activities to promote regular physical activity among school staff. <sup>1</sup>	Encourage and develop schedules that provide time within every school day for preschool, kindergarten, and elementary school students to enjoy supervised recess. <sup>1</sup>
	Provide lifetime physical skills in physical education programs. <sup>2</sup>	Increase collaboration among recreation agencies, education, health, and other organizations to help schools and communities implement physical activity programs. <sup>3</sup>
	Promote daily, quality physical education for pre-K through grade 12. <sup>3</sup>	<p>Increase collaboration with recreation and other community organizations to coordinate and enhance opportunities available to students and staff for physical activity during their out-of-school time.<sup>3,6</sup></p> <p>Develop state consensus standards for physical education and physical activity that meet national standards for schools and after-school programs.</p> <p>Require skills-based instruction on the benefits of lifelong physical activity as a part of the health education curriculum.</p> <p>Require certification and provide ongoing professional development opportunities for physical education teachers.<sup>1</sup></p>
COMMUNITY	Include education for parents and guardians as part of youth physical activity promotion initiatives. <sup>3</sup>	Establish a "Walking School Bus" with children in the community.
	Encourage parents and children to plan and participate in family physical activities together such as hiking, cycling, walking, etc. <sup>6</sup>	Promote community and transportation design that facilitates walking and bicycling, including lighting for safety, traffic calming techniques, frequent and safe pedestrian and bicycle crossings. <sup>8</sup>
	Encourage physical activities that families can engage in together such as walking to church, school, the library, or walking the dog. <sup>7</sup>	Increase funding for improving and expanding bike lanes, sidewalks, bike paths, and trails in communities. <sup>9</sup>
	Promote the benefits of physical activity and the recommended amounts of physical activity through radio, television, newspaper, organization newsletters, church newsletters, other local media and point of decision prompts. <sup>8</sup>	Encourage the development of paths and trails in parks and in other natural settings to encourage walking and bicycling for exercise and transportation, including rails-to-trails conversion. <sup>8,9</sup>

	INDIVIDUAL AND INTERPERSONAL	POLICY AND ENVIRONMENT
COMMUNITY	Conduct community-wide campaigns to encourage people to become more physically active. <sup>8</sup>	Increase community availability and accessibility of physical activity opportunities and facilities. <sup>3</sup>
	Conduct community-wide campaigns to encourage policy and environmental changes to make physical activity more accessible. <sup>8</sup>	Provide recognition or awards for walking and bicycling advocates, organizations, and programs whose efforts lead to increases in walking and bicycling.
	Encourage parents to participate in physical activity and to make physical activity an enjoyable part of family life.	Develop city/county policies/ordinances that require safe, accessible sidewalks, bike paths and recreation facilities in all new housing developments. <sup>9</sup>
	Through recreation and other community agencies provide programs that offer social support for increasing physical activity such as walking clubs and other group activities. <sup>8</sup>	
WORKSITES	Offer individually adapted health behavior change programs tailored to a person's readiness to change. <sup>8</sup>	
	Promote the benefits and recommended amounts of physical activity through worksite communications avenues such as newsletters, bulletin boards, PA announcements and payment envelopes/stubs.	Collaborate with community government to provide safe, accessible walking and biking routes to worksites.
	Conduct campaigns to promote walking and bicycling to work (active commuting).	Collaborate with the recreation and park agencies to identify and promote the use of parks and trails near worksites.
	Design point of decision prompts throughout the work place to remind and motivate employees to be more physically active. <sup>8</sup>	Beautify stairwells to promote usage.
	Offer employee physical activity programs in the worksite. <sup>2</sup>	Encourage employers and employee associations to implement policies and offer programs that promote physical activity among their employees and members. <sup>2</sup>
	Offer physical activity classes (aerobics, yoga, tai chi, etc.) for employees and provide adequate exercise equipment. <sup>2</sup>	Work with the business community to support worksite policies of "exercise flex-time". <sup>10</sup>
	Promote physical activity through work functions or related events such as corporate walk or run.	Develop policies that allow local community members to use company facilities.
	Collaborate with other agencies or companies to implement their promotional programs and health promotion efforts such as American Cancer Society's Active for Life program, Division of Public Health 20% Boost program or Georgia Striders.	Provide health insurance discounts to regularly active employees. <sup>11</sup>
HEALTH CARE		Design awards program for worksites in the state that promote and allow physical activity during work time. <sup>10</sup>
	Conduct an agency-wide physical activity campaign about the benefits of physical activity.	Construct physical activity facilities in all health care and hospital settings.
	Place educational materials about physical activity benefits and recommendations in health care office, waiting rooms, bulletin boards, etc.	Institute a required physical activity and behavior change training for all health care staff.

HEALTH CARE	INDIVIDUAL AND INTERPERSONAL	POLICY AND ENVIRONMENT
	Recruit health care systems and providers to co-sponsor community-wide campaigns and events.	Expand the number of health care sites that implement policies and programs to promote physical activity among their employees.
	Encourage physicians and other health care providers to provide written and verbal information to patients about physical activity benefits and recommendations related to health and chronic disease. <sup>2,12</sup>	Include physical activity and nutrition counseling as a requirement in minimum standard of care.
	Provide appropriate physical activity opportunities, through hospital and rehabilitation programs for individuals with chronic diseases.	Engage health care providers to advocate for increased physical activity opportunities and policies with local, regional, and state policymakers.
	Provide educational conferences and physical activity assessment and counseling tools for health care staff to encourage patients to be more active.	
	Encourage health care providers to model physically active lifestyles.	
	Promote strategies that encourage walking, bicycling, and taking public transit to work.	

## REFERENCES

1. National Association of State Boards of Education (NASBE). *Fit, Healthy, and Ready to Learn: A School Health Policy Guide*. March 2000.
2. U.S. Department of Health and Human Services. *Physical activity and health: a report of the Surgeon General*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 1996.
3. *Promoting Better Health For Young People Through Physical Activity and Sports*. A Report to the President from the Secretary of Health and Human Services and the Secretary of Education. Fall 2000.
4. U.S. Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Washington, DC: U.S. Government Printing Office, November 2000.
5. National Center for Bicycling and Walking, *The Vision: Our Schools*. Washington, D.C.
6. Guidelines for School and Community Programs to Promote Lifelong Physical Activity Among Young People. Morbidity and Mortality Weekly Report. March 7, 1997.
7. Nutrition and Physical Activity Workgroup (NUPAWG). *Guidelines for Comprehensive Programs to Promote Healthy Eating and Physical Activity*. 2002. Available at <http://www.astphnd.org>.
8. CDC Guide to Community Preventive Services. Systematic Reviews and Evidence Based Recommendations. MMWR, October 2001.
9. National Center for Bicycling and Walking, *The Vision: Our Schools*. Washington, D.C.
10. The Robert Wood Johnson Foundation. *Healthy Places, Healthy People: Promoting Public Health & Physical Activity through Community Design*. November 2000.
11. Centers for Disease Prevention and Control. *Promoting Physical Activity: A Guide for Community Action. A Step-by-Step Guide to Community-wide Behavior Change*. Centers for Disease Prevention and Control, 1999.
12. Kreuter MW, Cheda SG, Bull, F. How Does Physician Advice Influence Patient Behavior. JAMA 2000;9(5):426-33.

# Appendix I

## Physical Activity-Related Objectives from *Healthy People 2010*\* and Current Status of Objectives in Georgia

Objective No.	Objective	2010 Target	Georgia
22-1	Reduce the proportion of adults who engage in no leisure-time physical activity.	20%	25% <sup>‡</sup>
22-2	Increase the proportion of adults who engage in regular moderate or vigorous activity.	50%	42% <sup>‡</sup>
22-3	Increase the proportion of adults who engage in vigorous physical activity that promotes the development and maintenance of cardio-respiratory fitness 3 or more days per week for 20 or more minutes per occasion.	30%	25% <sup>‡</sup>
22-6	Increase the proportion of adolescents who engage in moderate physical activity for at least 30 minutes on 5 or more of the previous 7 days.	35%	25% high school students <sup>§</sup>
22-7	Increase the proportion of adolescents who engage in vigorous physical activity that promotes cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion.	85%	68% middle school students <sup>§</sup> 59% high school students <sup>§</sup>
22-9	Increase the proportion of adolescents (grades 9-12) who participate in daily school physical education.	50%	29% <sup>§</sup>
22-10	Increase the proportion of adolescents who spend at least 50 percent of school physical education class time being physically active.	50%	28% high school students <sup>§</sup>
22-11	Increase the proportion of children and adolescents who view television 2 or fewer hours per day.	75%	48% middle school students <sup>§</sup> 58% high school students <sup>§</sup>
22-12	Increase the proportion of the Nation's public and private schools that provide access to their physical activity spaces and facilities for all persons outside of normal school hours (that is, before and after the school day, on weekends, and during summer and other vacations).	**	86% public middle schools <sup>†</sup> 79% public high schools <sup>†</sup>
22-13	Increase the proportion of worksites (50+ employees) offering employer-sponsored physical activity and fitness programs.	75%	24% <sup>¶</sup>
22-14b	Increase the proportion of trips to school made by walking 1 mile or less among children aged 5-15 years.	50%	13% <sup>#</sup>

\* U.S. Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd Edition. Washington, DC: U.S. Government Printing Office, November 2000.

\*\* Developmental objective: Healthy People 2010 target not set.

‡ Georgia Behavioral Risk Factor Surveillance System 2003

§ Georgia Student Health Survey 2003

† School Health Education Profiles Survey 2002

¶ Georgia Worksite Health Promotion Policies and Practices Survey 2002

# Georgia Asthma Survey 2002

# Appendix II

## Data Tables

**Table 1.** Percent of middle and high school students engaging in activity by sex, race/ethnicity, and grade, Georgia, 1993 and 2003

	Vigorous Physical Activity <sup>†</sup> in 2003 % (95% CI) <sup>*</sup>		Vigorous Physical Activity <sup>†</sup> in 1993 % (95% CI) <sup>†</sup>		PE Classes 1+ times a week in 2003 % (95% CI) <sup>*</sup>		PE Classes 1+ times a week in 1993 % (95% CI) <sup>†</sup>	
<b>Middle School</b>	67.5	(±2.4)	NA**		64.9	(±6.3)	NA**	
Sex								
Male	71.0	(±3.1)	NA**		65.9	(±6.8)	NA**	
Female	63.9	(±3.3)	NA**		64.0	(±7.0)	NA**	
Race								
Black	61.2	(±4.6)	NA**		66.4	(±8.0)	NA**	
Hispanic	73.2	(±10.3)	NA**		68.9	(±11.3)	NA**	
White	71.6	(±2.2)	NA**		62.8	(±8.8)	NA**	
Grade								
6th	65.8	(±4.4)	NA**		58.5	(±9.4)	NA**	
7th	68.1	(±5.5)	NA**		69.2	(±9.2)	NA**	
8th	68.9	(±3.2)	NA**		67.1	(±7.1)	NA**	
<b>High School</b>	59.0	(±3.1)	59.5	(±5.6)	36.8	(±4.8)	40.7	(±5.9)
Sex								
Male	67.9	(±3.0)	73.6	(±5.9)	47.3	(±5.6)	50.8	(±7.1)
Female	50.0	(±4.1)	45.8	(±5.5)	26.7	(±4.7)	30.8	(±5.8)
Race								
Black	52.3	(±3.3)	57.0	(±7.5)	36.5	(±6.2)	46.6	(±8.3)
Hispanic	59.7	(±9.1)	§		§		§	
White	63.6	(±3.4)	61.1	(±5.9)	35.8	(±6.3)	37.5	(±6.9)
Grade								
9th	67.8	(±4.1)	66.5	(±4.2)	56.9	(±6.5)	57.8	(±9.5)
10th	60.7	(±4.2)	60.6	(±5.3)	31.3	(±7.1)	29.4	(±8.6)
11th	54.1	(±4.8)	50.7	(±13.8)	26.9	(±5.9)	30.8	(±13.8)
12th	48.2	(±5.3)	56.3	(±8.0)	23.7	(±9.3)	37.9	(±10.9)

\* Data were collected by Georgia Student Health Survey.

† Data were collected by Georgia Youth Risk Behavior Survey (YRBS).

‡ Exercised or participated in physical activities for at least 20 minutes that made them sweat and breathe hard on 3+ days of the past 7 days.

§ Fewer than 100 observations.

# Indicates change from 1993 to 2003 was statistically significant.

¶ Percent of students who were active for at least 20 minutes in PE class among students who were enrolled in PE.

\*\* Data were not collected in 1993



PE Classes Daily in 2003 % (95% CI)*		Active 20+ Minutes in PE Class in 2003 % (95% CI)†		Active 20+ Minutes in PE Class in 1993 % (95% CI)†		Participation on Sports Teams in 2003 % (95% CI)*		TV Viewing 2 Hours or less per School Day in 2003 % (95% CI)*	
29.1	(±9.8)	NA**		NA**		54.2	(±3.1)	48.3	(±4.9)
28.6	(±9.7)	NA**		NA**		60.1	(±3.0)	48.2	(±5.4)
29.7	(±10.2)	NA**		NA**		47.9	(±4.1)	48.3	(±5.7)
31.8	(±14.0)	NA**		NA**		51.7	(±4.1)	30.1	(±3.7)
25.3	(±11.8)	NA**		NA**		44.0	(±9.6)	49.9	(±10.1)
28.1	(±10.2)	NA**		NA**		57.5	(±4.1)	61.1	(±3.6)
25.4	(±10.5)	NA**		NA**		53.2	(±7.0)	47.4	(±6.8)
29.8	(±12.1)	NA**		NA**		54.6	(±5.4)	48.5	(±7.1)
32.7	(±12.8)	NA**		NA**		54.9	(±3.8)	48.3	(±6.4)
29.1	(±3.9)	83.9#	(±3.3)	75.8	(±3.9)	53.1	(±3.7)	57.6	(±3.8)
37.7	(±4.5)	87.3	(±4.0)	83.8	(±3.7)	58.7	(±3.9)	55.8	(±3.7)
20.9	(±4.6)	78.1#	(±5.8)	63.9	(±5.9)	47.6	(±4.5)	59.4	(±5.3)
25.9	(±5.6)	75.4	(±6.1)	75.7	(±5.9)	49.2	(±4.7)	37.8	(±3.2)
§		§		§		47.8	(±10.4)	54.3	(±7.6)
30.4	(±5.2)	90.2#	(±3.1)	77.0	(±5.4)	56.4	(±4.6)	71.6	(±3.0)
46.5	(±6.2)	83.6#	(±3.6)	73.8	(±5.2)	58.4	(±5.1)	55.9	(±4.9)
24.2	(±6.8)	81.6	(±7.7)	77.5	(±4.2)	53.7	(±4.3)	54.9	(±7.2)
21.9	(±5.2)	88.8	(±6.3)	75.1	(±14.8)	52.8	(±5.4)	60.5	(±6.0)
16.6	(±5.9)	§		79.1	(±5.9)	44.7	(±6.3)	61.2	(±8.0)

**Table 2.** Percent of adults engaging in activity by demographic groups, Georgia, 2003\*

	Regularly active % (95% CI)		Insufficiently active % (95% CI)		Inactive % (95% CI)	
Overall	42.4	(±1.7)	40.2	(±1.6)	17.4	(±1.2)
<b>Sex</b>						
Males	46.8	(±2.6)	38.3	(±2.5)	14.9	(±1.8)
Females	38.3	(±1.9)	42.0	(±1.9)	19.7	(±1.5)
<b>Age</b>						
18-24	55.1	(±6.0)	34.1	(±5.5)	10.8	(±3.8)
25-34	48.3	(±3.8)	38.6	(±3.7)	13.0	(±2.9)
35-44	43.4	(±3.3)	42.9	(±3.4)	13.6	(±2.4)
45-54	38.6	(±3.2)	44.9	(±3.3)	16.5	(±2.3)
55-64	35.1	(±3.5)	43.5	(±3.7)	21.4	(±2.9)
65 or older	29.4	(±3.2)	35.5	(±3.2)	35.2	(±3.2)
<b>Race/Ethnicity</b>						
White, non-Hispanic	44.8	(±2.0)	41.1	(±1.9)	14.2	(±1.2)
Black, non-Hispanic	37.5	(±3.6)	38.2	(±3.1)	24.2	(±2.9)
Hispanic	28.0	(±8.4)	51.6	(±11.0)	20.4	(±7.7)
<b>Income</b>						
Less than 15,000	30.2	(±5.8)	35.0	(±5.4)	34.8	(±5.0)
15,00-24,999	36.5	(±3.7)	40.1	(±3.8)	23.3	(±3.3)
25,000-34,999	44.9	(±4.8)	39.0	(±4.4)	16.1	(±3.2)
35,000-49,999	40.7	(±3.7)	43.2	(±3.8)	16.1	(±3.1)
50,000-74,999	50.6	(±4.0)	41.0	(±3.9)	8.4	(±2.1)
75,000 or more	48.2	(±3.8)	45.5	(±3.8)	6.2	(±1.7)
<b>Education</b>						
High school or less	30.0	(±3.9)	30.6	(±3.6)	39.4	(±4.0)
High school graduate	39.0	(±4.8)	40.1	(±2.7)	20.9	(±2.3)
Some college	46.0	(±3.3)	41.4	(±3.1)	12.6	(±2.0)
College graduate	48.0	(±3.0)	43.3	(±3.0)	8.7	(±1.5)

\* Data were collected by the Georgia Behavioral Risk Factor Surveillance System.

**Table 3.** Percent of adults engaging in activity by county of residence, Georgia, 2001 and 2003\*†

County	Regularly Active %	Insufficiently Active %	Inactive %	County	Regularly Active %	Insufficiently Active %	Inactive %	County	Regularly Active %	Insufficiently Active %	Inactive %
Appling	41	31	28	Fannin	43	32	25	Oglethorpe	27	53	19
Atkinson	36	35	29	Fayette	41	36	24	Paulding	45	40	15
Bacon	38	29	33	Floyd	42	36	22	Peach	46	35	18
Baker	32	42	26	Forsyth	42	37	21	Pickens	46	36	17
Baldwin	47	33	20	Franklin	39	39	23	Pierce	45	28	27
Banks	38	40	22	Fulton	43	33	25	Pike	39	39	22
Barrow	38	43	19	Gilmer	46	28	27	Polk	32	50	18
Bartow	45	40	15	Glascock	39	40	21	Pulaski	42	44	14
Ben Hill	37	29	34	Glynn	48	33	19	Putnam	52	31	17
Berrien	42	32	26	Gordon	41	40	19	Quitman	32	44	24
Bibb	46	37	18	Grady	39	33	28	Rabun	40	39	20
Bleckley	43	40	17	Green	48	32	20	Randolph	34	43	23
Brantly	45	33	22	Gwinnett	41	41	17	Richmond	35	50	15
Brooks	45	29	25	Habersham	38	42	20	Rockdale	41	41	18
Bryan	39	44	17	Hall	33	46	22	Schley	42	40	18
Bulloch	36	46	18	Hancock	45	33	22	Screven	33	47	20
Burke	37	46	18	Haralson	37	46	17	Seminole	41	36	22
Butts	37	42	21	Harris	33	44	23	Spalding	39	39	22
Calhoun	28	47	25	Hart	36	48	17	Stephens	47	31	22
Camden	46	32	22	Heard	36	45	19	Stewart	34	43	24
Candler	34	44	22	Henry	41	40	19	Sumter	35	46	19
Carroll	40	37	23	Houston	46	38	16	Talbot	39	36	25
Catoosa	48	34	18	Irwin	35	35	30	Taliaferro	37	42	20
Charlton	40	39	21	Jackson	32	47	22	Tattnall	43	36	21
Chatham	40	42	18	Jasper	39	42	19	Taylor	42	36	21
Chattahoochee	35	41	24	Jeff Davis	36	33	32	Telfair	39	32	29
Chattooga	39	40	21	Jefferson	36	44	21	Terrell	26	47	27
Cherokee	46	41	12	Jenkins	38	39	23	Thomas	38	33	29
Clarke	22	59	20	Johnson	41	35	24	Tift	34	40	26
Clay	29	49	22	Jones	50	31	19	Toombs	34	36	29
Clayton	43	38	19	Lamar	41	35	25	Towns	41	43	16
Clinch	42	29	29	Lanier	46	28	26	Treutlen	39	41	21
Cobb	50	37	13	Laurens	44	37	19	Troup	40	36	24
Coffee	39	32	29	Lee	28	47	26	Turner	30	41	28
Colquitt	36	39	25	Liberty	41	40	19	Twiggs	45	38	17
Columbia	34	44	22	Lincoln	31	47	22	Union	46	28	26
Cook	44	32	24	Long	46	36	17	Upson	39	34	27
Coweta	41	36	23	Lowndes	47	28	25	Walker	42	40	18
Crawford	48	31	22	Lumkin	41	37	22	Walton	41	42	16
Crisp	35	45	20	McDuffie	34	49	17	Ware	37	30	33
Dade	42	36	21	McIntosh	47	35	18	Warren	38	42	21
Dawson	44	39	17	Macon	42	40	18	Washington	40	40	20
Decatur	39	36	25	Madison	31	49	20	Wayne	40	33	27
DeKalb	41	39	20	Marion	35	40	25	Webster	32	44	24
Dodge	40	39	21	Meriwether	35	43	22	Wheeler	41	37	22
Dooly	39	43	18	Miller	34	40	26	White	41	39	21
Dougherty	25	44	31	Mitchell	35	38	27	Whitfield	46	31	24
Douglas	45	36	19	Monroe	44	32	24	Wilcox	34	41	25
Early	31	46	23	Montgomery	36	40	24	Wilkes	31	50	19
Echols	47	24	28	Morgan	42	45	13	Wilkinson	48	32	20
Effingham	37	45	18	Murray	42	34	23	Worth	30	42	28
Elbert	35	44	21	Muscogee	30	43	27				
Emanuel	34	44	22	Newton	41	43	16				
Evans	42	40	18	Oconee	36	43	21				

\* Data were collected by the Georgia Behavioral Risk Factor Surveillance System

† County specific estimates were obtained by including, if necessary, responses from adjacent counties (see Appendix IV).

**Table 4.** Percent of adults engaging in activity by year, Georgia, 1984-2004\*

Year	No Leisure Time Physical Activity % (95% CI)	Inactive % (95% CI)	Insufficiently active % (95% CI)	Regularly active % (95% CI)
1984	29.8 (±4.5)			
1985	38.3 (±3.8)			
1986	38.4 (±3.1)			
1987	33.4 (±2.8)			
1988	32.3 (±3.3)			
1989	36.7 (±2.6)			
1990	37.0 (±2.5)			
1991	39.9 (±2.6)			
1992	39.6 (±2.6)			
1993	†			
1994	33.0 (±2.3)			
1995	†			
1996	51.4 (±2.4)			
1997	40.5 (±2.4)			
1998	29.6 (±2.3)			
1999	25.8 (±2.1)	21.7 (±2.2)	43.0 (±2.6)	35.3 (±2.5)
2000	29.0 (±1.7)	23.8 (±2.3)	44.3 (±2.7)	31.9 (±2.6)
2001	27.3 (±1.6)	21.2 (±1.5)	39.0 (±1.9)	39.8 (±1.9)
2002	25.7 (±1.5)	†	†	†
2003	24.5 (±1.4)	17.4 (±1.2)	40.2 (±1.6)	42.4 (±1.7)
2004	25.8 (±2.5)	†	†	†

\* Data were collected by the Georgia Behavioral Risk Factor Surveillance System.

† Data were not collected.

Note: 3-year averages presented in Figure 2-12 were estimated based on data in Table 4.

**Table 5.** Most common types of leisure time activity among adults, Georgia, 1984, 1994, and 2004\*

Year	Walking % (95% CI)	Home Maintenance % (95% CI)	Running or Jogging % (95% CI)	Indoor Conditioning Activities % (95% CI)	Recreational Activities % (95% CI)
1984	52.0 (±5.7)	34.8 (±5.4)	22.1 (±4.9)	19.1 (±4.3)	3.3 (±1.7)
1994	49.5 (±2.9)	8.9 (±1.5)	11.6 (±1.9)	25.5 (±2.4)	5.8 (±1.4)
2004	53.3 (±2.4)	10.6 (±1.3)	16.9 (±2.1)	27.2 (±2.1)	7.9 (±1.2)

\* Data were collected by the Georgia Behavioral Risk Factor Surveillance System.

**Table 6.** Age-adjusted percent of adults with a chronic condition, by physical activity level, Georgia, 2003\*

PHYSICAL ACTIVITY LEVEL	Obesity % (95% CI)	Diabetes % (95% CI)	High blood pressure % (95% CI)	Stroke % (95% CI)	Arthritis % (95% CI)	Poor mental health % (95% CI)
Regularly active	18.9 (±2.0)	6.0 (±1.3)	25.0 (±2.1)	1.9 (±0.6)	26.0 (±2.0)	30.1 (±3.1)
Insufficiently active	29.5 (±2.4)	8.0 (±1.2)	29.3 (±1.9)	1.7 (±0.6)	28.0 (±1.8)	35.1 (±2.4)
Inactive	31.3 (±3.7)	12.2 (±1.9)	39.4 (±4.1)	4.0 (±1.2)	33.5 (±3.5)	37.4 (±4.5)

\* Data were collected by the Georgia Behavioral Risk Factor Surveillance System

**Table 7.** Percent of middle and high schools providing policies and environments supporting physical activity, Georgia, 2002\*

	Middle Schools % (95% CI)	High Schools % (95% CI)
Allow faculty and staff to use physical activity such as running laps or push-ups, to punish students for bad behavior in physical education.	25.7 (±7.2)	28.4 (±7.3)
Require students to take at least one course in physical education.	61.6 (±8.1)	94.3 (±4.2)
Offer students an opportunity to participate in intramural activities or physical activity clubs.	62.4 (±7.1)	42.9 (±9.4)
Allow children or adolescents to use of school's athletic facilities for community-sponsored sports teams or physical activity programs.	85.5 (±5.9)	79.0 (±6.8)

\* Data were collected by the 2002 School Health Education Profiles (SHEP) Survey.



**Table 8.** Percent of children aged 5-15 years who lived  $\leq 1$  mile from school and walked to school, Georgia, 2000 and 2002-2003\*

Year	Children walking to school % (95% CI)
2000	18.6 ( $\pm 5.8$ )
2002-2003	13.3 ( $\pm 4.9$ )

\* Data were collected by the Georgia Household Asthma Survey

**Table 9.** Percent of children aged 5-15 years who lived  $\leq 1$  mile from school and did not walk or bike to school, by reason they did not walk or bike to school, Georgia, 2002-2003\*

Difficulties	% (95% CI)
Traffic	54.4 ( $\pm 7.7$ )
Other	17.4 ( $\pm 5.3$ )
No difficulty	14.1 ( $\pm 5.4$ )
Too far	6.4 ( $\pm 3.1$ )
Crime	4.0 ( $\pm 2.8$ )
Not allowed	1.7 ( $\pm 1.6$ )
Weather	0.5 ( $\pm 0.5$ )

\* Data were collected by the Georgia Household Asthma Survey

**Table 10.** Percent of adults with a safe place to walk by location, Georgia, 2001

Location	% (95% CI)
Neighborhood street or sidewalk	32.0 ( $\pm 1.8$ )
Public park	26.8 ( $\pm 1.8$ )
School track	10.2 ( $\pm 1.1$ )
Gym or fitness center	7.8 ( $\pm 1.2$ )
Walking or jogging trail	6.6 ( $\pm 1.0$ )
Treadmill at home	4.1 ( $\pm 0.8$ )
Shopping mall	2.9 ( $\pm 0.7$ )

\* Data were collected by the Georgia Behavioral Risk Factor Surveillance System and cited in Powell KE, Martin LM, Chowdhury PP. Places to Walk: Convenience and Regular Physical Activity. Am J Public Health 2003;93(9):1519-21.

**Table 11.** Percent of regularly active adults by access to a safe place to walk, Georgia, 2001\*

	Access to a safe place to walk % (95% CI)	No access to a safe place to walk % (95% CI)
Regularly active adults	41.5 ( $\pm 2.1$ )	27.4 ( $\pm 6.2$ )

\* Data were collected by the Georgia Behavioral Risk Factor Surveillance System and cited in Powell KE, Martin LM, Chowdhury PP. Places to Walk: Convenience and Regular Physical Activity. Am J Public Health 2003;93(9):1519-21.

**Table 12.** Percent of worksites providing policies and environments supporting physical activity by size of worksite, Georgia, 2002\*

	Overall Worksites % (95% CI)	Worksites 15-99 employees % (95% CI)	Worksites 100-249 employees % (95% CI)	Worksites 250+ employees % (95% CI)
<b>Policies</b>				
Had policy to encourage commute by foot or bike	2.1 (±0.9)	1.1 (±1.1)	1.8 (±1.8)	11.1 (±3.9)
Subsidized cost of public transportation	9.3 (±3.2)	7.6 (±3.8)	9.0 (±5.2)	26.0 (±7.8)
Allowed flextime for physical activity	16.8 (±3.0)	15.8 (±3.7)	16.9 (±5.0)	25.7 (±5.2)
Offered subsidized or reduced rate health memberships	23.7 (±3.3)	19.6 (±4.0)	29.9 (±5.8)	50.6 (±6.0)
<b>Environments</b>				
Had on-site exercise facilities	12.8 (±2.6)	10.5 (±3.1)	13.2 (±4.6)	32.7 (±5.6)
Had bike racks	15.0 (±2.8)	12.9 (±3.4)	16.7 (±5.0)	31.5 (±5.6)
Had locker room with showers	20.7 (±2.9)	17.0 (±3.5)	27.6 (±5.7)	43.5 (±5.9)
Had indoor stairway	46.4 (±3.9)	40.5 (±4.9)	60.3 (±6.3)	79.8 (±4.4)
<b>Programs</b>				
Offered physical activity or fitness program	16.8 (±2.8)	13.1 (±3.4)	23.1 (±5.5)	41.5 (±5.9)

\* Data were collected by the 2002 Georgia Worksite Health Promotion Policies and Practices Survey

**Table 13.** Number of Health Maintenance Organizations (HMOs) providing physical activity-related services, Georgia, 2004\*

	HMOs	
	All Members N (%)	At Risk Members N (%)
Routinely provide physical activity education to members.	5 (83)	0 (0)
Assess and counsel members on physical activity.	4 (67)	1 (17)
Allow discounts or fee reductions to members who join specified programs to help start and maintain physical activity.	3 (50)	0 (0)
Reimburse providers and pay members who receive a physical activity assessment or counseling from specialists.	1 (17)	0 (0)

\* Data were collected by the 2004 Georgia Health Plan Policies and Practices Survey

# Appendix III

## Estimating the Burden of Inactivity and the Benefits of Activity

### Population Attributable Risk:

Population attributable risk (PAR) is an estimate of the proportion of deaths or other measures of disease burden caused by a particular risk factor. The PAR represents the proportion of disease in a population that could be eliminated if the exposure were removed from the population. For example, the PAR of heart disease deaths due to inactivity is the fraction of heart disease deaths that would not occur if everyone were regularly active. As a formula, it is expressed:

$$(1) \text{ PAR} = \frac{\# \text{ of Heart Disease Deaths (actual)} - \# \text{ of Heart Disease Deaths (If all regularly active)}}{\# \text{ of Heart Disease Deaths (actual)}}$$

Because the value for “# of Heart Disease Deaths (if all regularly active)” cannot be directly measured, PAR is usually calculated using another formula that requires the prevalence of the risk factor and the relative risk of those with the risk factor compared to those without the risk factor.

$$(2) \text{ PAR} = \frac{\sum P_{\text{exp}(i)} * (RR_i - 1)}{1 + \sum [P_{\text{exp}(i)} * (RR_i - 1)]} \times 100$$

In this equation,  $P_{\text{exp}}$  is the prevalence of the exposure,  $RR$  is the relative risk, and  $(i)$  is the level of exposure to the risk factor if there is more than one level of the risk factor. The categories of activity used in this report provide two levels of risk, one level for those who are inactive and one level for those who are irregularly active. It is important to note that even if everyone were regularly active, the diseases of interest, such as heart disease or diabetes, would not be completely eliminated from the population. The rate of disease would be determined by the prevalence of other causal factors.

Calculating the PAR using formula (2) (above) assumes that other risk factors, known or unknown, are unassociated with the risk factor of interest. This assumption often does not hold. When it does not, the calculated PAR will be either higher or lower than the actual number. A second assumption of the PAR calculated with formula (2) is that the prevalences of the other risk factors would not change if the risk factor of interest disappeared. These assumptions and others make the PAR an imperfect estimate of the proportion of disease caused by a specific risk factor. Nevertheless, the PAR provides a useful approximation of the potential gains from reducing the prevalence of various risk factors, including inactivity.

### Population events prevented:

Population events prevented (PEP) is an estimate of the proportion of deaths or other measures of disease burden prevented by a protective exposure. The PEP represents the additional proportion of disease in a population that would occur if the protective exposure were removed from the population. For example, the PEP of activity is the additional fraction of heart disease deaths that would occur if everyone were inactive. The formulas for PEP corresponding to formula (1) and formula (2) are:

$$(3) \text{ PEP} = \frac{\# \text{ of Heart Disease Deaths (if all inactive)} - \# \text{ of Heart Disease Deaths (actual)}}{\# \text{ of Heart Disease Deaths (actual)}}$$

$$(4) \text{ PEP} = \frac{(RR_s - 1) - (\sum P_{\text{exp}(i)} * (RR_i - 1))}{1 + \sum [P_{\text{exp}(i)} * (RR_i - 1)]} \times 100$$

$RR_s$  is the relative risk of the sedentary group with respect to the regularly active,  $P_{\text{exp}}$  is the prevalence of exposure and  $RR$  is the relative risk and  $(i)$  is the level of exposure to the risk factor if there is more than one.

### Conditions selected for PAR and PEP analysis:

The PAR and PEP estimates have been calculated for four conditions for which physical activity is known to reduce risk – heart disease, hypertension, colon cancer, and non-insulin dependent diabetes mellitus – and for stroke and osteoporotic fractures.

Some studies have shown evidence of a beneficial effect of regular physical activity on the incidence of stroke.<sup>1,2,3</sup> Stroke is a heterogeneous disorder with several different pathologies. The benefits on stroke brought about by physical activity presumably occur for the most prevalent subtype of stroke in the United States, atherothrombotic stroke, which accounts for approximately 61% of all stroke cases.<sup>4</sup>

The PAR and PEP estimates for osteoporotic fractures were based on hospital discharges for hip fractures among

individuals 60 years of age or older. Physical activity has been shown to help maintain normal muscle strength, joint structure, and joint function. This decreases the risk of fall-related hip fracture and enables older adults to remain functionally independent for longer periods of time.<sup>5</sup>

There is also evidence that regular physical activity reduces the symptoms of depression and anxiety, and improves overall quality of life.<sup>5</sup> In this report we did not attempt to quantify these important benefits of regular physical activity. More research is needed for confirmation of the effects of physical activity on the risk of other conditions such as cholecystitis (gall bladder inflammation, usually from gallstones), other cancers, and suicide.

**Population attributable risk (PAR) of insufficient physical activity for heart disease, high blood pressure, stroke, colon cancer, diabetes, and falls with osteoporotic fractures.**

Activity Category	P <sub>exp</sub>	Heart Disease		High Blood Pressure		Stroke		Colon Cancer		Falls with Osteoporotic Fractures		Diabetes	
		RR	PAR	RR	PAR	RR	PAR	RR	PAR	RR	PAR	RR	PAR
Inactive	0.17	2.0	13%	1.4	6%	1.4	6%	1.4	6%	1.6	8%	1.5	7%
Insufficiently active	0.40	1.4	12%	1.2	7%	1.2	7%	1.2	7%	1.3	10%	1.2	7%
Regularly active	0.42	1.0		1.0		1.0		1.0		1.0		1.0	
Total PAR		25%		13%		13%		13%		18%		14%	

PAR = Population Attributable Risk, P<sub>exp</sub> = Prevalence of the exposure, RR = Relative Risk

**Relative risks for the selected conditions:**

The summary relative risk (RR) is considered the risk of inactive persons compared to regularly active persons. For heart disease and diabetes, estimates for the RR were obtained from a recent article on the costs of inactivity.<sup>6</sup> The estimated relative risks for all stroke (without regard to subtype), hypertension, colon cancer, and osteoporotic fractures were taken from a review article.<sup>7</sup> The geometrical mean of each summary RR and 1 was assigned for insufficiently active persons. Relative risks for inactivity and insufficient activity for each condition are listed in the table above. The PAR and PEP estimates for stroke, hypertension, colon cancer, and osteoporotic fractures in this report are lower than those presented in the 2001 Georgia Physical Activity Report because we used a different source for the relative risk estimates for these conditions.

**Hospitalizations and hospital charges:**

The number of deaths, hospitalizations, and hospital charges for each of the six conditions in Georgia in 2003 were obtained from the Georgia Hospital Discharge Survey data. The following ICD-9 codes were used: Ischemic Heart Disease, 410-414; Hypertension (High Blood Pressure), 401-404; Stroke, 430-438; Diabetes, 250; Colon Cancer, 153; Osteoporosis, 733 and for persons 60 years of age or more, 820 (fracture of the neck of the femur).

**Deaths:**

The number of deaths in Georgia in 2003 due to each of the six conditions was obtained from Georgia Vital Statistics data. The following ICD-10 codes were used: Ischemic Heart Disease, I20-I25; Hypertension (High Blood Pressure), I10-I13; Stroke, I60-I69; Diabetes, E10-E14; Colon Cancer, C18; Osteoporotic falls and fractures, M80-M81.

**REFERENCES**

1. Bronner LL, Kanter DS, Manson JE. Primary Prevention of Stroke. *The New England Journal of Medicine* 1995; 333(21): 1392-1400.
2. Lee IM, Paffenbarger RS. Physical activity and stroke incidence: the Harvard Alumni Health Study. *Stroke* 1998; 10: 2049-2954.
3. Sacco RL, Gan RL, Boden-Albala B, Lin IF, Kargman DE, Hauser WA, Shea S, Paik MC. Leisure-time physical activity and ischemic stroke risk: the Northern Manhattan Stroke Study. *Stroke* 1998; 29(2)380-387.
4. American Heart Association. 2001 Heart and Stroke Statistical Update. Dallas, Texas: American Heart Association, 2000.
5. U.S. Department of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General*. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 1996.
6. Colditz, GA. Economic costs of obesity and inactivity. *Med Sci Sports Exerc* 1999;31(11, Suppl):S663-S667.
7. Katzmarzyk PT, Gledhill N, Shephard RJ. The Economic Burden of Physical Inactivity in Canada. *Canadian Medical Association Journal* 2000; 163(11): 1435-40.

# Appendix IV

## Data Sources for Physical Activity

### Youth Risk Behavior Survey (YRBS)

The Youth Risk Behavior Survey was developed by the Centers for Disease Control and Prevention (CDC) to collect data on behaviors among youth related to the leading causes of morbidity and mortality through a self-administered survey. The 1993 questionnaire was designed for high school students and consisted of 84 items. Questions related to physical activity included participation in vigorous intensity activity, strengthening or toning muscles, school physical education attendance, and time spent in school physical education class being active.

A total 1,621 students participated in the 1993 Georgia YRBS. Analyses by race were limited to whites and blacks because the number of people of other races and ethnicities was too small to give stable estimates. Results from the survey were weighted to represent students attending all public high schools in Georgia.

### Georgia Student Health Survey (GSHS)

The Georgia Student Health Survey (GSHS) was developed by the Georgia Department of Human Resources, Division of Public Health to gather data on behaviors among youth related to the leading causes of morbidity and mortality. The survey consists of two self-administered, anonymous questionnaires. One questionnaire was developed for middle school students and contained 55 items. The other questionnaire was developed for high school students, and contained 94 items. Both questionnaires were modeled after the core Youth Risk Behavior Survey (YRBS), developed by CDC. Questions related to physical activity in the 2003 GSHS included vigorous intensity physical activity, moderate intensity physical activity, school physical education class, sports team participation as well as television viewing.

A total of 2,195 middle school and 2,066 high school students participated in the 2003 GSHS. Analyses by race and ethnicity were limited to Whites, Blacks, and Hispanics because the number of people of other races and ethnicities was too small to give stable estimates. Results from the GSHS were weighted to represent students attending all public middle schools and high schools in Georgia, respectively.

### Georgia Behavioral Risk Factor Surveillance System (BRFSS)

The Georgia Behavioral Risk Factor Surveillance System (BRFSS) data were analyzed to assess the physical activity patterns among adult Georgians. The BRFSS is a survey conducted annually, since 1984, by the Division of Public Health, Georgia Department of Human Resources. Each month, adults 18 years of age and older in Georgia were randomly selected to be interviewed by telephone using standardized methods and questionnaires. The BRFSS covered a wide range of health behaviors including seat belt use, high blood pressure, and physical activity, providing estimates of the prevalence of these risk factors for injury and disease.

In 2003, a total of 7,651 adults aged 18 and over in Georgia were included in the BRFSS. All estimates by demographic characteristics in this report were based on the 2003 survey. Trends in the percent of adults reporting no leisure time physical activity were from 1984 through 2004 data. The county specific estimates used data from 2001 and 2003. The estimates for the most frequent reported types of physical activity were from 1984, 1994, and 2004. The trend analysis was not age-adjusted to a standard population. The analysis by race and ethnicity was limited to white non-Hispanics, black-non-Hispanics, and Hispanics because the number of people of races and ethnicities other than white, black, or Hispanic was too small to provide a stable estimate.

County specific estimates were obtained by including, if necessary, responses from participants in adjacent counties. If a county had fewer than 200 respondents, in 2001 and 2003 combined, respondents in all bordering counties were included as if they were residents of the county of interest. If there were still fewer than 200 respondents after adding one concentric ring of counties, a second or third concentric ring was added. Only Georgia residents were used. Thirteen counties did not need a ring to reach the required sample size. One hundred twenty counties needed one ring, while twenty-seven counties required two rings and one county needed three rings. The county specific prevalence estimates were weighted according to the public health district demographic characteristics. The purpose of reporting the estimates by county were to compare regional patterns in physical activity reported in Physical Activity Report, Georgia, 2001 and to meet the needs of local stakeholders.

Information about the frequency, intensity, and duration of a respondent's physical activity behaviors was obtained from a series of questions regarding exercise, recreational activity, or physical activities away from the job. The BRFSS questions



about moderate physical activity begin by asking, “In a usual week, do you do moderate activities for at least 10 minutes at a time, such as brisk walking, bicycling, vacuuming, gardening, or anything else that causes a small increase in breathing or heart rate?” If the respondent answered yes, information is then obtained about the type, frequency, and duration of the activity. Respondents were then asked about vigorous activity in an identical manner. Vigorous activity was defined as any activities that causes a large increase breathing or heart rate such as running, aerobics, or heavy yardwork.

Three levels of physical activity among Georgians were defined in this report based on the number of days per week the respondents reported performing the activities and the number of minutes the respondent was active each time they performed the activities. Respondents were considered regularly active if

- a) They reported activity on 5 or more days per week and accumulated 30 minutes or more of at least moderate intensity activity on those days, or
- b) They reported activity on 3 or more days per week and accumulated 20 minutes or more of vigorous intensity activity on those days
- c) Met the criteria for both regular moderate and vigorous activity.

Respondents were considered insufficiently active if they reported doing some moderate or vigorous activity but did not meet the criteria for regular moderate or vigorous activity. The BRFSS has two methods to estimate the percent of inactive adults. One method considered respondents inactive if they did not engage in at least 10 minutes of moderate or vigorous activity outside of work in a usual week. The other method considered respondents inactive during leisure time if they did not participate in any physical activities for exercises such as running, calisthenics, golf, gardening, or walking for exercise during the past month. More respondents reported no leisure time physical activity for exercise than no moderate or vigorous activity. We think the ‘no moderate or vigorous activity’ category is an underestimate of inactivity because adults may have only responded to the increased heart rate criteria and ignored the 10-minute requirement in the question.

The BRFSS allowed 56 specific kinds of physical activities to be recorded. To examine the activities that were the most common, the activities were grouped into eight categories. The categories are shown in the table below.

#### BRFSS activities by category

Name	Activities included in Category
Walking	Walking
Indoor Conditioning Activities	Aerobics class, aerobics/ballet, bicycling machine, boxing, calisthenics, dancing, health club exercise, home exercise, judo/karate, rope skipping, stair climbing, weight lifting, rowing machine
Recreational Activities	Backpacking, bicycling for pleasure, bowling, golf, hiking cross-country, horseback riding, hunting large game – deer, elk, mountain climbing, skating – ice or roller, sledding, tobogganing, snow shoeing, snow skiing, table tennis, other
Home Maintenance Activities	Carpentry, gardening (spading, weeding, digging, filling), mowing lawn, painting/papering house, raking lawn, snow shoveling by hand, snow blowing
Jogging	Jogging, running
Team sports	Basketball, soccer, softball, touch football, volleyball
Water activities	Boating (canoeing, rowing, sailing for pleasure), camping, canoeing/rowing in competition, fishing from riverbank or boat, scuba diving, snorkeling, stream fishing in waders, surfing, swimming laps, water skiing

### **School Health Education Profiles (SHEP) Survey**

The School Health Education Profile (SHEP) survey consisted of two mailed questionnaires developed by the CDC. The surveys asked principals and lead health educators questions about the implementation, organization, structure, and support of health education in their schools. The 2002 SHEP survey instruments consisted of 41 questions related to administration of health education and 21 questions related to instruction.

All public middle and high schools in Georgia having at least one of grades 6 through 12 were included in the sample frame. Two hundred twenty six sampled principals (71% response rate) and 260 sampled lead health educators (70% response rate) completed and returned the survey. Results from the survey were weighted to reduce bias by compensating for differing patterns of non-response and to reflect the likelihood of sampling each school. The weighted survey results in this report can be used to make inferences about health education in all Georgia public middle and high schools.

### **Georgia Household Asthma Survey**

Data on modes of transportation to school were collected on the Georgia Asthma Survey, a statewide, representative, random-digit telephone survey of Georgia households with children. A parent or caregiver in households with at least one child aged less than 18 years reported on all children residing in the home. Respondents were asked about the mode of transportation to school, distance between home and school rounded to the nearest mile, and barriers of walking and biking to school among those who did not walk or bike.

A total of 1,656 children aged 5-15 years in Georgia were included in 2000 and 2,357 children aged 5-15 years were included in 2002-2003 survey. Results from the surveys were weighted to represent all children aged 5-15 years in Georgia.

### **Georgia Worksite Health Promotion Policies and Practices Survey**

The Georgia Worksite Health Promotion Policies and Practices Survey, modeled after the National Worksite Health Promotion Survey, was conducted for the first time in 2002 to document existing policies, environments, and programs affecting the health of Georgia workers. Computer-assisted telephone interviews were conducted with the director of human resources or employee health. Survey findings represent a random sample of private sector worksites with at least 15 employees identified from the Dun and Bradstreet database. Worksites were stratified into three size categories: small (15-99), medium (100-249), and large (250+) and four industrial categories. A total of 1,085 worksites completed the survey with a response rate of 54%. Final data were weighted so that each stratum represented its true proportion in the worksite population.

### **Georgia Health Plan Policies and Practices Survey**

The Georgia Health Plan Policies and Practices Survey, adapted from existing tools in Montana and New York, was conducted for the first time in 2004. The purpose of the survey was to document existing policies and guidelines for primary and secondary prevention of cardiovascular disease, counseling and health education on physical activity, nutrition, and tobacco cessation, and assessment and counseling for high blood pressure and high cholesterol in health plans in Georgia. Requests for data were sent to all health plans in Georgia, however only HMOs had direct managed care responsibility for members and were eligible to provide data. Of the 9 eligible HMOs, 6 provided data (response rate: 67%) covering 93% of the HMO member population in Georgia. Data was collected through face-to-face interviews with the Chief Medical Officer or other appropriate person from each participating HMO.



---

**Live**  
**Healthy**  
**Georgia**

